

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

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

## COVER SHEET

### 1. Institution Name

Rhode Island College

### 2. State

Rhode Island

### 3. Date submitted

MM DD YYYY

08 / 06 / 2010

### 4. Report Preparer's Information:

Name of Preparer:

Mary M. Sullivan

Phone:

Ext.

(401) 456-9851

E-mail:

mmsullivan@ric.edu

### 5. NCATE Coordinator's Information:

Name:

Alexander Sidorkin

Phone:

Ext.

(401) 456-8110

E-mail:

asidorkin@ric.edu

### 6. Name of institution's program

Secondary Education - Mathematics MAT

**7. NCATE Category**

Mathematics Education

**8. Grade levels<sup>(1)</sup> for which candidates are being prepared**

7-12

(1) e.g. 7-12, 9-12

**9. Program Type**

First teaching license

**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**

Secondary Mathematics

**14. Program report status:**

Initial Review

Response to One of the Following Decisions: Further Development Required or Recognition with Probation

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

**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 INCLUDING SPACES)**

Rhode Island College, one of three public colleges in Rhode Island (RI), was founded in 1854 as the RI State Normal School, later became a teaching college, and in 1958 was renamed to reflect its purpose as a comprehensive institution. Located in Providence, the institution serves approximately 9,000 students within five schools: Feinstein School of Education and Human Development (FSEHD), Faculty of Arts and Sciences (FAS), School of Nursing, School of Management, and School of Social Work. The Secondary Education – Mathematics B.A. Program is located in the FSEHD with mathematics content provided by FAS. Mathematics education faculty have joint appointments in FAS and FSEHD. The College is accredited by the New England Association of Schools and Colleges and the FSEHD by NCATE.

The Master of Arts in Teaching (MAT) program accepts candidates who already possess a baccalaureate degree and who have potential for success in graduate mathematics coursework and classroom teaching. The sequence of professional courses concludes with an intensive semester of student teaching. MAT program learning outcomes align with the NCTM Standards and the Rhode Island Professional Teaching Standards (RIPTS).

Successful candidates will be able to:

1. explain the Conceptual Framework of the FSEHD, the RIPTS, and relevant Rhode Island Dept. of Education initiatives, and describe their relationship to teaching secondary mathematics;
2. describe and demonstrate how reflective teachers think and act;
3. construct, teach, and reflect upon lessons and units that model developmentally appropriate practices aligned with NCTM Standards and the RIPTS;
4. select and utilize formal and informal assessment strategies to determine the impact of instruction on learning, provide feedback, and plan future instruction;
5. describe the role and purposes of collaborative relationships with family and community, and plan and apply methods for involving family in the learning process;
6. describe the importance of lifelong professional development, be involved in relevant professional organizations, and utilize journals available for continued professional growth using available technology.

All candidates are expected to have the equivalent preparation as undergraduate candidates in mathematics, including calculus, proof, geometry, discrete mathematics, number theory, algebra, probability, statistics, and history, and physics and computer programming. It is common for candidates to take one or more 400-level mathematics courses to remediate deficiencies. Their professional sequence mirrors that of undergraduates, though some courses are offered at the graduate level, and contains courses in foundations of education, psychology, special education, general and mathematics methods, and a fifteen-week student teaching placement and seminar.

The academic year consists of two semesters and summer sessions. Students receive letter grades (A, A-, B+, ..., D-, F); GPAs are based on the standard 4.0 scale. The Departments of Mathematics & Computer Science and Educational Studies jointly determine whether applicants satisfy criteria for admission to FSEHD, including a 3.0 GPA overall and in mathematics and a minimum passing score of 140 on the ETS PRAXIS II Mathematics #0061 exam, and tracks candidate's progress in content and professional courses.

Graduates of the program are highly qualified to teach mathematics as specified in the RI secondary Grade Span Expectations and elementary Grade Level Expectations (Number and Operations; Geometry and Measurement; Functions and Algebra; and Data, Statistics, and Probability; Problem Solving, Reasoning, and Proof; and Communication, Representations and Connections) that are closely connected to Principles and Standards for School Mathematics (NCTM, 2000). Teaching and content standards are embedded in mathematics and methods courses and student teaching.

**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 INCLUDING SPACES)**

The Secondary Education program at Rhode Island College contains a variety of field experiences prior to the capstone student teaching experience. Expectations for candidates increase developmentally from early field experiences to the student teaching semester. Field experiences are aligned with educational theory courses and candidates are required to take them in a progressive order.

**FNED 546: Contexts of Schooling (3 cr.).** In this initial course in the professional sequence, candidates observe best practices in a mathematics classroom and tutor students for 20 hours. Many placements are arranged through the Volunteers in Providence Schools (VIPS) program and take place in urban, very diverse schools. A goal of the experience is for teacher candidates to develop an understanding of working with adolescent learners and how social, economic and cultural factors affect teaching and learning. Course instructors require written feedback from teacher candidates, in which they describe and analyze what they are seeing and experiencing in light of their course content.

**SED 406: Instructional Methods, Design, and Technology (2 cr.\*).** In this course, which is taken concurrently with the theory course CEP 552 Psychological Perspectives on Learning & Teaching, teacher candidates learn fundamentals of lesson design and methods for integrating instructional technology to enhance content area teaching and learning and observe outstanding mathematics teachers in area public schools for a total of four hours. They write reflections on their observations and make connections to classroom content. Teacher candidates also design and micro-teach two lessons with peer groups; lessons are taped and evaluated in consultations with their course instructor.

\*Will increase to 3 cr. in Fall 2010.

**SED 407: Instructional Methods, Design, and Literacy (2 cr.\*).** Within the 10-hour field component of this initial Practicum course, teacher candidates explore research-based reading and writing strategies for the mathematics classroom and apply these strategies when they design and present literacy instruction in a field-based setting. Teacher candidates observe, consult with the classroom teacher (clinical instructor), and prepare and teach one reading lesson and one writing lesson in mathematics. The teacher candidates are evaluated by the clinical instructor.

\*Will increase to 3 cr. in Fall 2010.

**SED 410: Practicum in Secondary Education (5 cr.\*\*).** Teacher candidates study principles, methods, and curriculum in their teaching area, including global perspectives and health issues. In the field, teacher candidates prepare and deliver lessons and work with individual students, small groups, and classes in grades 7-12. Each content area has its own section of this course. The secondary education - mathematics Practicum meets for 14 weeks, 10 hours per week. All teacher candidates and the supervisor remain together as a group during both field placements, one each in a middle and high school. A clinical instructor works with a group of 2 or 3 teacher candidates. Teacher candidates initially observe their clinical instructor and learn about the students in their class before they begin their own teaching. The lessons are observed and evaluated by both the clinical instructor and the college

supervisor. Teacher candidates also write reflections on their lessons and observations, and their ability to apply teaching concepts is assessed. During both three- to four-week placements, the RIC mathematics education faculty member (usually the same person assumes the roles of class instructor and college supervisor in the field) is on-site whenever teacher candidates are in the schools. At least one placement takes place in an urban school with a diverse population. The field component is approximately half the total hours, 10 hours per week for six- to seven- weeks, a total of about 60 – 70 hours.

\*\* Course will be split into two courses in Fall 2010: SED 411 Content and Pedagogy in Secondary Education (4 cr.) and SED 412 Field Practicum in Secondary Education-Math (2 cr.).

SED 421: Student Teaching in the Secondary School (10 cr.). For their capstone field experience, teacher candidates are placed in a secondary setting full-time five days per week for the fifteen-week semester under the supervision of a cooperating teacher and a college supervisor. After a week or so of observation, teacher candidates begin teaching their first class. Other courses are added after the teacher candidate demonstrates competence with the initial course. It is expected that teacher candidates will teach three different courses for at least four weeks of the student teaching experience. Teacher candidates who wish to add a middle level endorsement to their secondary certificate divide their student teaching between the high school and middle school. Teacher candidates are observed at least three times each by the cooperating teacher and the college supervisor; each prepares a written evaluation. In addition, candidates meet on campus with their college supervisor for a weekly 2-hour Seminar.

#### Field Placements

The Feinstein School of Education and Human Development (FSEHD) has established formal partnerships with 26 RI school districts and 1 charter school. Partnership Agreements, which are renewable upon the end of the three-year term, delineate, among other items, criteria for selecting cooperating schools, clinical instructors, and cooperating teachers. Generally field experiences and student teaching assignments are made in partnership school districts.

Clinical instructors and cooperating teachers complete training in the RI Professional Teaching Standards, offered by the Office of Partnerships and Placements (OPP). Starting Fall 2010, cooperating teachers will be required to complete a professional development course offered by Rhode Island College during the semester that he/she serves as a cooperating teacher (to be renewed every four years).

Upon recommendation made by the college supervisor, the Dean of the OPP is responsible for placement of teacher candidates in Practicum in Secondary Education (SED 410) and Student Teaching (SED 421). Prior to Student Teaching, all teacher candidates must present evidence of having completed 25 hours of community service.

#### Criteria for personnel

All clinical instructors for the Practicum in Secondary Education and cooperating teachers for Student Teaching are certified to teach mathematics at the level they teach, that is middle school and/or high school. Cooperating teachers for Student Teaching must have three years successful teaching experience with at least one year in the current assignment. College supervisors maintain a private list of 'best' practitioners who constitute the first ones contacted to be cooperating teachers.

The college supervisors in this program are full-time mathematics education faculty who hold joint appointments in the FSEHD and FAS. Most years, the college supervisor is also the instructor from SED 410 Practicum, providing the opportunity to view growth in the teacher candidates over an academic

year. Occasionally, a retired mathematics education faculty member with similar credentials and experience assists with supervision of student teachers.

**3. 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.)**

MAT Advising Form

See **Attachments** panel below.

**4. 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.**

RIPTS\_NCTM Indicator Alignment\_MAT

See **Attachments** panel below.

### 5. 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: Secondary Education - Mathematics MAT		
Academic Year	# of Candidates Enrolled in the Program	# of Program Completers <sup>(2)</sup>
2009-2010	1	1
2008-2009	2	1
2007-2008	4	2

<sup>(2)</sup> 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.

### 6. 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	Bierden, James
Highest Degree, Field, & University <sup>(3)</sup>	PhD, Mathematics Education University of Michigan, 1968

Assignment: Indicate the role of the faculty member <sup>(4)</sup>	Clinical supervisor P-12 schools
Faculty Rank <sup>(5)</sup>	Professor Emeritus
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship <sup>(6)</sup> , Leadership in Professional Associations, and Service <sup>(7)</sup> :List up to 3 major contributions in the past 3 years <sup>(8)</sup>	1. Consultant for the Blackstone Academy Charter [High] School in Pawtucket, 2007-2009 2. Intermediary Service Provider to support the Rhode Island Mathematics and Science Initiative, 2009 present
Teaching or other professional experience in P-12 schools <sup>(9)</sup>	Clinical supervisor in mathematics for Rhode Island College, 2008 and Providence College, 2009

Faculty Member Name	Christy, Donna
Highest Degree, Field, & University <sup>(3)</sup>	Ed.D. in Curriculum & Teaching: Mathematics Education Boston University
Assignment: Indicate the role of the faculty member <sup>(4)</sup>	Faculty; Clinical Supervisor; Administrator
Faculty Rank <sup>(5)</sup>	Associate Professor
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship <sup>(6)</sup> , Leadership in Professional Associations, and Service <sup>(7)</sup> :List up to 3 major contributions in the past 3 years <sup>(8)</sup>	1. Invited Workshop: The Math Wizard of OZ ; National Council of Teachers of Mathematics Eastern Regional Conference; Boston, MA; October 2009. 2. Invited Member: RI Department of Education Math Education Leadership Council; February 2009-Present 3. Publication: Alice in Numberland: Through the Standards in Wonderland ; Teaching Children Mathematics; National Council of Teachers of Mathematics; Vol 14 No. 8; April, 2008; pgs. 436-446.
Teaching or other professional experience in P-12 schools <sup>(9)</sup>	1.Clinical supervisor for secondary education-math teacher candidates (2007-2008; 2010-2011) 2.Lesson Study with K-8 teachers in 3 school districts (Spring 2010-Fall 2010); inquiry-based teaching/learning of multiplication. Project proposal funded through Project RITER. 3. Spring 2010 graduate-level math course developed and taught for high school teachers: Math 500: Bridges and Extensions; connects school-college math using an inquiry-based format.

Faculty Member Name	LaFerla, Vivian
Highest Degree, Field, & University <sup>(3)</sup>	Ed.D, Mathematics Education Boston University
Assignment: Indicate the role of the faculty member <sup>(4)</sup>	Faculty; Clinical Supervisor
Faculty Rank <sup>(5)</sup>	Professor
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship <sup>(6)</sup> , Leadership in Professional Associations, and Service <sup>(7)</sup> :List up to 3 major contributions in the past 3 years <sup>(8)</sup>	La Ferla, V., Olkun, S., Akkurt, Z. & Topta , V. (2010). A Cross-Cultural Study: Assessing and Improving Spatial Thinking Of Pre-Service Teachers. Proceedings of EDULEARN10 Conference, ISBN:978-84-613-9386-2, pp.6671-6676. International Conference on Education and New Technologies, Barcelona (Spain)-5th-7th July, 2010. Grants: Spatial Abilities of Pre-service Elementary Teachers. Faculty Research Grant, \$1350. (2010). Reviewer: Mathematics Teacher (2006-2010) Presentations: NCTM regional conference (Fall 2009), ATMNE (Fall 2008, Fall 2007)
	Clinical supervision: algebra I, II, geometry, selected topics, pre-algebra,

Teaching or other professional experience in P-12 schools <sup>(9)</sup>	inclusion classes, grades 9-12 Teacher Training in geometry, grades 5-8 Achieve, ADP, item reviewer & data analysis for Algebra I and Algebra II end-of-course national exams.
--	--

Faculty Member Name	Sullivan, Mary M.
Highest Degree, Field, & University <sup>(3)</sup>	Ed. D. in Mathematics Education University of Massachusetts Lowell
Assignment: Indicate the role of the faculty member <sup>(4)</sup>	Faculty; Clinical Supervisor; Administrator
Faculty Rank <sup>(5)</sup>	Professor
Tenure Track	<input checked="" type="radio"/> YES
Scholarship <sup>(6)</sup> , Leadership in Professional Associations, and Service <sup>(7)</sup> : List up to 3 major contributions in the past 3 years <sup>(8)</sup>	1. Rhode Island College Feinstein School of Education and Human Development, Faculty-Student Partnership Research Grant, January, 2009, to investigate Knowing Problem Solving for Teaching. 2. Chairperson, Committee on Statistics in Two-Year Colleges, American Statistical Association (Chairperson of the Review of the Carnegie Foundation for the Advancement of Teaching Statway Project, Summer 2010; Reviewer for Common Core State Standards 2009-2010). 3. Presenter: ATMNE Fall Conference (2008, 2009, 2010)
Teaching or other professional experience in P-12 schools <sup>(9)</sup>	1. Principal Investigator: Problem Solving and Critical Thinking with Discrete Mathematics, Rhode Island Higher Education Partnership Grant (Title II, Part A, No Child Left Behind Act of 2001), 2010-2012. 2. Developed graduate-level math course for high school teachers: Math 550: Exploring Statistics: Review, Revisit, Re-Examine, scheduled for Summer 2010. 3. College supervisor for secondary education mathematics teacher candidates in Practicum and Student Teaching (2008-2009).

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

(4) e.g., faculty, clinical supervisor, department chair, administrator

(5) e.g., professor, associate professor, assistant professor, adjunct professor, instructor

(6) 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.

(7) 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.

(8) e.g., officer of a state or national association, article published in a specific journal, and an evaluation of a local school program.

(9) 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 NCTM 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 (10)	Type or Form of Assessment (11)	When the Assessment Is Administered (12)
Assessment #1: Licensure assessment, or other content-based assessment (required)	PRAXIS II 0061 Mathematics	Standardized comprehensive examination	Prior to admission
Assessment #2: Content knowledge in secondary mathematics education (required)	Grades: mathematics content courses	Course grades	Ongoing throughout the program
Assessment #3: Candidate ability to plan instruction (required)	1) Lesson Plan with execution, reflection 2) Teacher Candidate Work Sample (Components for Unit)	Portfolio Components	1) During SED 410 Secondary Education Practicum - Mathematics 2) During SED 421 Student Teaching
Assessment #4: Student teaching (required)	Final Student Teaching Evaluation	Teaching Evaluation	During SED 421 Student Teaching
Assessment #5: Candidate effect on student learning (required)	Analysis of Student Learning	Portfolio component (Teacher Candidate Work Sample)	During SED 421 Student Teaching
Assessment #6: Additional assessment that addresses NCTM standards (required)	Algebra & Trigonometry Assessment	Department comprehensive examination	Prior to SED 410 Secondary Education Practicum – Mathematics
Assessment #7: Additional assessment that addresses NCTM standards (optional)	Performance Task	Extended problem solving task	During SED 410 Secondary Education Practicum - Mathematics
Assessment #8: Additional assessment that addresses NCTM standards (optional)			

(11) Identify assessment by title used in the program; refer to Section IV for further information on appropriate assessment to include.

(12) Identify the type of assessment (e.g., essay, case study, project, comprehensive exam, reflection, state licensure test, portfolio).

(13) 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.	☺	☺	☺	☺	☺	☺	☺	☺
1. Knowledge of Problem Solving. Candidates know, understand and apply the process of mathematical problem solving. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	b	b	€	b	b	€
2. Knowledge of Reasoning and Proof, Candidates reason, construct, and evaluate mathematical arguments and develop an appreciation for mathematical rigor and inquiry. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	☺	b	b	b	☺	☺	☺	☺
3. Knowledge of Mathematical Communication. Candidates communicate their mathematical thinking orally and in writing to peers, faculty and others. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	€	b	b	b	b	b	b	€
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 are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	b	b	☺	☺	b	☺
5. Knowledge of Mathematical Representation. Candidates use varied representations of mathematical ideas to support and deepen students' mathematical understanding. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	b	b	b	b	b	€
6. Knowledge of Technology. Candidates embrace technology as an essential tool for teaching and learning mathematics. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	☺	b	b	b	b	b	☺	☺
7. Dispositions. Candidates support a positive disposition toward mathematical processes and mathematical learning. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	€	€	b	b	b	€	€	€
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 <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	☺	☺	b	b	b	☺	☺	☺
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 the meaning of operations. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	€	€	€	b	€	€
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 are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	☺	☺	☺	b	☺	☺
11. Knowledge of Geometries. Candidates use spatial visualization and geometric modeling to explore and analyze geometric shapes, structures, and their properties. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	€	€	€	€	€	€

12. Knowledge of Calculus. Candidates demonstrate a conceptual understanding of limit, continuity, differentiation, and integration and a thorough background in techniques and application of the calculus. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	e	e	e	e	e	e
13. Knowledge of Discrete Mathematics. Candidates apply the fundamental ideas of discrete mathematics in the formulation and solution of problems. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	b	e	e	e	e	e	e
14. Knowledge of Data Analysis, Statistics and Probability. Candidates demonstrate an understanding of concepts and practices related to data analysis, statistics, and probability. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	e	e	e	e	e	e	e
15. Knowledge of Measurement. Candidates apply and use measurement concepts and tools. [Indicators are listed at <a href="http://www.nctm.org/about/ncate/secondary_indic.htm">http://www.nctm.org/about/ncate/secondary_indic.htm</a> ]	b	e	e	e	e	b	e	e

**2. 16.1 Field-based Experience. Engage in a sequence of planned opportunities prior to student teaching that includes 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 Experience. 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. 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.	e	e	b	e	b	e	e	e

## SECTION IV - EVIDENCE FOR MEETING STANDARDS

**DIRECTIONS:** The 6-8 key assessments listed in Section II must be documented and discussed in Section IV. Taken as a whole, the assessments must demonstrate candidate mastery of the SPA standards. The key assessments should be required of all candidates. Assessments and scoring guides and data charts 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. Data tables should also be aligned with the SPA standards. The data should be presented, in general, at the same level it is collected. For example, if a rubric collects data on 10 elements [each relating to specific SPA standard(s)], then the data chart should report the data on each of the elements rather than reporting a cumulative score..

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 to be aligned with the elements 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 one document that includes the following items:

(1) A two-page narrative that includes the following:

- a. A brief description of the assessment and its use in the program (one sentence may be sufficient);
  - b. 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.
  - c. A brief analysis of the data findings;
  - d. An interpretation of how that data provides evidence for meeting standards, indicating the specific SPA standards by number, title, and/or standard wording;
- and

(2) Assessment Documentation

- e. The assessment tool itself or a rich description of the assessment (often the directions given to candidates);
- f. The scoring guide for the assessment; and
- g. Charts that provide candidate data derived from the assessment.

The responses for e, f, and g (above) should be limited to the equivalent of five text pages each , however in some cases assessment instruments or scoring guides may go beyond five pages.

Note: As much as possible, combine all of the files for one assessment into a single file. That is, create one file for Assessment #4 that includes the two-page narrative (items a – d above), the assessment itself (item e above), the scoring guide (item f above, and the data chart (item g above). Each attachment should be no larger than 2 mb. Do not include candidate work or syllabi. There is a limit of 20 attachments for the entire report so it is crucial that you combine files as much as possible.

**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 as outlined in the directions for Section IV**

---

See **Attachments** panel below.

**2. Assessment of content knowledge in mathematics. NCTM standards addressed in this entry could include but are not limited to Standards 1-7 and 9-15. Examples of assessments include comprehensive examinations, GPAs or grades, and portfolio tasks<sup>(13)</sup>. For post-baccalaureate teacher preparation, include an assessment used to determine that candidates have adequate content background in the subject to be taught.(Assessment Required)**

**Provide assessment information as outlined in the directions for Section IV**

Course Grades MAT Program

See **Attachments** panel below.

---

(14) 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 include the evaluation of candidates' abilities to develop lesson or unit plans, individualized educational plans, needs assessments, or intervention plans. (Assessment Required)**

**Provide assessment information as outlined in the directions for Section IV**

Mathematics Addendum FSEHD Forms

Assessment of Ability to Plan 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 as outlined in the directions for Section IV**

Student Teaching Evaluation

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 as outlined in the directions for Section IV

Assessment of candidate effect on student learning

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 as outlined in the directions for Section IV

Algebra & Trigonometry Department Examination

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 as outlined in the directions for Section IV

Mathematics Content Portfolio - Performance Task

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 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 INCLUDING SPACES)

All MAT candidates who enter student teaching have completed all mathematics requirements for certification, successfully passed two content examinations in mathematics, ETS PRAXIS #0061 and a department exam in Algebra & Trigonometry, and successfully passed the state licensure exam, ETS PRAXIS PLT, with a minimum score of 167. Generally, MAT candidates have completed the graduate level mathematics courses in their program as well. Analysis of the data sources compiled for this report data confirm that teacher candidates who complete the program at Rhode Island College are strong in content knowledge (as seen in content assessments 1, 2, 6 and 7), can demonstrate pedagogical skill in the classroom (documented in assessments 3 and 4), and know whether their students are learning (documented in assessment 6). Changing trends in education necessitate program changes. We present issues that analysis of the data brought to the forefront and actions we plan to take in the areas of content knowledge, pedagogical skill and student learning we plan to take.

## Content

Ongoing analysis of the program resulted in our making two content-related changes that took effect in September 2009 and affect candidates admitted to the program as of that date: raising the grade point average (GPA) in mathematics required to enter SED 410 Practicum from 2.50 to 2.75 and limiting to four the number of courses that could be repeated to earn that GPA. The change was prompted by observation of candidates who demonstrated insufficient content depth in their preparation and delivery of classroom lessons. In some cases, the candidate could not complete student teaching, presenting hardship to the candidate so late in the process. Our ongoing review of the program's strengths and weaknesses is essential to continual improvement. We apply this requirement to mathematics courses taken by MAT candidates during their tenure at the College.

Analysis of course grades and sequence revealed that all candidates struggle to meet the demands of SED 410 Practicum and MATH 432 Abstract Algebra, which traditionally have been taken in the same semester. Revision to the sequence of courses, challenging because upper level courses tend to be offered annually, is in process. MATH 432 is a course that some MAT candidates take as part of their program. They will be advised not to take the course simultaneously with Practicum.

While it is clear from the data that candidates demonstrate content knowledge strength, it is less clear that all candidates can demonstrate strength across all the NCTM standards owing to choice among graduate courses. Currently MAT candidates complete only the Performance Task of the Content Portfolio that undergraduates complete because they enter the program with their mathematics content completed, except perhaps in one or two areas. In revisiting the Content Portfolio next year, a goal will be to decide whether MAT candidates should create a partial portfolio consisting of artifacts for any undergraduate course they may be required to take to meet certification requirements in mathematics. We believe that every candidate should be able to demonstrate competence in every content standard, and we are unable to make that claim currently.

The difficulty that some undergraduate candidates have had with the algebra-trigonometry examination raises the question of revisiting more high school mathematics prior to the final field experiences. In conjunction with developing a revised program, we will likely consider inclusion of a course that examines high school mathematics from an advanced perspective and invite MAT candidates to consider enrolling.

## Professional and Pedagogical Knowledge, Skills and Dispositions

The structure of the Mathematics & Computer Science Department, which is also the 'home' department for the three full-time mathematics education faculty, and the size of the program facilitate communication among mathematics and mathematics education faculty about the teacher candidates.

Mathematics education faculty also teach mathematics courses, so they often have direct knowledge of teacher candidates as students from the classes they teach. A concern of some mathematics education faculty is in the area of dispositions – can teacher candidates whose dispositions, when in the role of students, reveal undesirable teacher qualities change personalities so completely when placed in a teacher role? Over the next year, this will be a topic of discussion in the Mathematics Education Committee. In the current assessment system, there is no place for content faculty to voice concerns about dispositions, and we must consider whether such teacher candidates should move forward in the program and how to incorporate content faculty feedback into the FSEHD process of assessing dispositions.

Over the past two years, there has been considerable investment toward revising unit assessments so they are aligned with state professional teaching standards and can be used in content areas when the reader mentally inserts the name of the content area into each assessment indicator. This writer has served on the assessment committee and has piloted the instruments. Using the indicators included in this report (assessment 3), inserting ‘mathematics’ into each one and providing an addendum developed by adapting NCTM program standards, the assessment of candidate’s knowledge of mathematics for teaching and skill in teaching was able to be rated similarly by the cooperating teacher and college supervisor on a jointly-observed lesson. This is a major improvement. A goal will be to investigate whether additional data specific to the addendum should be collected and included in the electronic portfolio system, Chalk and Wire.

#### Effect on Student Learning

That candidates are well prepared to design instruction is evident in analysis of their lesson plans and TCWS processes Assessment Plan and Design of Instruction (assessment 3). From their attention to detail in lesson and unit planning, it is expected that student learning will occur.

However, the area in which candidates had the lowest scores among TCWS processes was for Analysis of Student Learning. It is not surprising, given that they have little opportunity before student teaching to analyze student growth over a several-week-period using real assessments. While candidates develop assessments, grade actual student work, and discuss implications for instruction currently during Practicum, it is not sufficient preparation for analysis of learning for a unit of instruction. A goal will be to develop/locate materials to help candidates acquire this skill during Practicum and develop confidence in their ability before they begin student teaching. Ideally, within the materials there will be opportunity to learn about students in a class and the content they have been taught, examine pre- and post-assessment data, and interpret what the data reveals about the effectiveness of instruction and future teaching episodes.

#### Conclusion

In this report, we have demonstrated that the program at Rhode Island College to prepare candidates to be secondary educators in mathematics, a living entity that adapts and changes to meet emerging demands, achieves at a very high level the standards set by NCATE/NCTM. In order to continue to have a strong program, we will continue to use the data to guide our decisions as we move forward, as this practice has served us well.

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

**1. For Revised Reports: Describe what changes or additions have been made to address the standards that were not met in the original submission. Provide new responses to questions and/or**



**new documents to verify the changes described in this section. Specific instructions for preparing a Revised Report are available on the NCATE web site at <http://www.ncate.org/institutions/resourcesNewPgm.asp?ch=90>**

**For Response to Conditions Reports: Describe what changes or additions have been made to address the conditions cited in the original recognition report. Provide new responses to questions and/or new documents to verify the changes described in this section. Specific instructions for preparing a Response to Conditions Report are available on the NCATE web site at <http://www.ncate.org/institutions/resourcesNewPgm.asp?ch=90>**

**(Response limited to 24,000 characters. INCLUDING SPACES)**

**Please click "Next"**

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