I. General Information

Date: May 1, 2012

Undergraduate: X Graduate: __________

Program name: Mathematics Education Curriculum code(s): MED and MSM

Program coordinator: Karen Hollebrands

Program(s) reviewed: Bachelor’s X Master’s __ Doctor’s __ Other __

II. Enrollment

Fall 2011 (Access University Planning & Analysis, Institutional Research: http://www2.acs.ncsu.edu/UPA/) Use data from the specialty area report or on the website you may find enrollment listed by department and curriculum—just keep scrolling on the menu on the left hand side.)

FR 40 SO 43 JR 58 SR 71 Total 212* (*includes double degrees)

Licensure only ____ Lateral entry ____

Master’s ____ Master’s Licensure only ____ Sixth-year ____ Doctoral ____

Undergraduate student teachers: Fall 27 Spring 29 (includes MAT)

Graduate student internships: Fall ____ Spring ____ (include all placements)

Other field placements (describe):

III. Total Degrees Awarded

Report degrees completed for summer 2011, December 2011, and May 2012 (Access University Planning & Analysis, Institutional Research http://www2.acs.ncsu.edu/UPA/; if May 2012 degrees have not yet
been posted, use the department graduation list. On the website, you will find degrees listed by department and curriculum—just keep scrolling on the menu on the left hand side.)

<table>
<thead>
<tr>
<th></th>
<th>BS - MED</th>
<th>BS - MSM</th>
<th>MAT</th>
<th>MEd</th>
<th>MS</th>
<th>PhD</th>
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</thead>
<tbody>
<tr>
<td>Summer/Dec</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 2012</td>
<td>25</td>
<td>4</td>
<td>6</td>
<td>5</td>
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IV. Evaluation

- What changes in the program faculty were made during the year?

No changes to program faculty were made. Three doctoral students were hired to teach EMS 204 and EMS 480 (two TAs in Fall one TA in Spring). Another doctoral student was hired to teach ED 204. In addition five adjuncts were hired in the Fall to supervise student teachers and four adjuncts were hired in Spring to supervise student teachers. In addition, three doctoral students also assisted with student teacher supervision.

- List any course or curriculum proposals and/or revisions during the academic year.

Spring 2012 was the first semester EMS 472 and EMS 474 were offered as full semester courses. There will be discussions this summer about how best to coordinate the face-to-face classes with the field placement component, which will later become their student teaching placement. In particular, it was suggested that we have students sign up for a “lab” section of the course to facilitate student placements.

Students were required to complete evidence 2 (in EMS 472), evidence 3 (EMS 472/474), and evidence 5 (EMS 471 – student teaching) and evidence 4 (certification of capacity). The faculty discussed methods for consistently assess the evidences to assure they meet standards. There is concern especially for evidence 5 since many of our student teachers have university supervisors who are not faculty.

Plans are also underway with the development of EMS 490, School Mathematics from an Advanced Perspective. This course will be offered for the first time in Fall 2012. It is a capstone course that incorporates topics from the History of Mathematics. The offering of this course is in alignment with recommendations from the Mathematics Education of Teachers draft report soon to be released (http://www.cbmsweb.org/MET2/MET2Draft.pdf).

In addition, Karen Hollebrands submitted a proposal to participate in the Mathematics Education of Teachers conference in Atlanta. The team, which includes faculty from East Carolina and staff from NC DPI, Wake County, and Pitt County will be meeting
regularly to consider how we can best prepare teachers to implement the Common Core State Standards.

**Review of 2011-2012 Student Teaching Data**

Three sources of data were analyzed:

a. Open-ended responses from the student teacher survey about strengths, weaknesses and suggestions from 53 mathematics education student teachers

b. Likert scale responses from student teachers at the end of the Fall 2011 and Spring 2012 semesters. The questions were rating from 1 (low) to 5 (high) on student teachers’ perception of their preparedness in the 10 categories in which they are evaluated from the student teaching rubrics in mathematics education

c. Final performance ratings from university supervisors/cooperating teachers for each category on the mathematics education student teaching rubric for all student teachers in Fall 2011 and Spring 2012.

**Open-ended responses**

In responses from student teachers, all courses were cited several times as being strengths of the program, with EMS 203/4, EMS 470, EMS 472, and EMS 480 being mentioned frequently. There was wide variability in responses concerning courses such EMS 474, EMS 472, and EMS 480, with some students valuing the content in these courses, and others listing the course as a weakness in the program. Many student teachers commented that they felt very prepared to write lesson plans and to manage a classroom. They valued the focus of the courses on teaching mathematics conceptually. Most student teachers expressed having a positive experience with their cooperating teacher and university supervisors citing support, feedback, observations, and general positive approach to constructive criticism. However, these same themes were also noted as suggested ways for some cooperating teachers and university supervisors to improve. Mainly the suggestions focused on establishing open lines of communication about classroom management and providing constructive, immediate, feedback to student teachers about their lessons. Some of the weaknesses student teachers noted was too much information “crammed” into the student teaching semester, not enough experience in schools, and not enough focus on the mathematics they would be teaching.

**Likert Scale Responses on Self Perception of Preparedness**

The following graph displays the distribution of each rating (1-5) for each of the 11 categories (1-11). This stacked bar chart illustrates that for all categories except for 3 (Managing Student Behavior) and 5 (Managing Instructional Time) the vast majority of our student teachers rated that they felt Well prepared (4) or Exemplary (5). We view these as excellent responses that our teacher candidates
feel that they have been well prepared (or better) in the major areas emphasized in our program.

This second graph below displays the overall average rating of preparedness by these 53 student teachers in each of the 11 categories. The lowest average ratings were questioning techniques, assessing student knowledge, time management, and aligning instruction with state standards. The highest rating was creating a learning environment and using a variety of instructional strategies. All other categories had average ratings of about 4 (e.g., planning, implementing lessons, knowing content, managing student behavior).
Final Performance Ratings of Student Teachers

Our student teachers received generally high ratings in their final performance ratings agreed upon by their university supervisors and cooperating teachers. Not surprisingly, managing student behavior and use of questioning techniques were the lowest ratings, though both only slightly below and above 4. The student teachers’ self perception of their preparedness on average is typically well below the average performance ratings, except for use of instructional strategies for which teachers rated their preparedness higher than their performance rating.

<table>
<thead>
<tr>
<th></th>
<th>Performance Ratings</th>
<th>Preparedness Ratings</th>
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<tbody>
<tr>
<td></td>
<td>MEAN MEDIA ST Dev</td>
<td>MEAN MEDIA ST Dev</td>
</tr>
<tr>
<td>Prof Attributes</td>
<td>4.77 5 .60</td>
<td></td>
</tr>
<tr>
<td>Content Knowledge</td>
<td>4.31 4 .69</td>
<td>4.28 4 .77</td>
</tr>
<tr>
<td>Learning Environment</td>
<td>4.59 5 .56</td>
<td>4.3 4 .67</td>
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<tr>
<td>Category</td>
<td>Mean</td>
<td>SD</td>
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<td>------------------------------</td>
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<tr>
<td>Student Behavior</td>
<td>3.81</td>
<td>.76</td>
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<tr>
<td>Planning</td>
<td>4.38</td>
<td>.75</td>
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<tr>
<td>Implementation</td>
<td>4.2</td>
<td>.63</td>
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<tr>
<td>Materials</td>
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<tr>
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<tr>
<td>Questioning</td>
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<tr>
<td>Instructional Time</td>
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<td>Monitoring and Assessment</td>
<td>4.47</td>
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<tr>
<td>Alignment</td>
<td>4.9</td>
<td>.48</td>
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**Suggested changes based on analysis**
- Plans to consider in which courses will learn lesson planning skills
- Focus on content taught in high school in the new course EMS 490
- Maximize the involvement of faculty and permanent instructors in student teaching as much as possible.
- We want to be sure that discussions about classroom management and engagement are modeled and made explicit in our courses such as EMS 470, EMS 472/474.
- We want to be sure that questioning techniques and lesson planning continue to be a focus and are emphasized consistently throughout all our courses.

- What special accomplishments were made during the year? (Mention faculty and student honors, publications, awards, grants and other relevant "bragging points")

**Faculty and Student Honors**

**Hollylynne Lee** and her collaborators were awarded the National Technology Leadership Initiative Award and recognized for having the “best paper” at the Association of Mathematics Teacher Educators conference.

**Cora Shull**, was named a top ten scholar athlete and recognized at the Caterpillar Scholar Athlete Banquet.
Tyler Brannan and Chris Limer received their second year of support as a Noyce Mathematics Education Teaching Scholar

Ebonye Taylor - undergraduate research grant - faculty mentor Allison

New Grants Awarded


Qualcomm Foundation. LPP-Sync Diagnostic Assessment System to Strengthen Rational Number Reasoning. PI: Jere Confrey, Co-PI: Alan Maloney. Award Amount $390,000 (March 2011-February 2012).

TUES grant, Preparing to teach mathematics with technology-Expanding, transforming and Building Community (PTMT-ETC), submitted to NSF (PI Hollylynne Lee, Co-PI Allison McCulloch, Co-PI Karen Hollebrands) to develop materials for preparing teachers to teach middle and high school algebra using technology. STATUS: Awarded 2011-2014. $500,000.


Main Enrichment Designed to Increase Achievement & Networking [MEDIAN]. This grant was awarded by the NC State Office for Institutional Equity & Diversity through the Diversity Mini-grant program. The goal of the project is to improve the retention and graduation of the students from historically underrepresented groups in mathematics education through their participation in a weekly workshop designed to strengthen the depth of their mathematical understanding and develop a community of learners that will provide academic support for one another as they progress through the mathematics education program. PI: Allison Mitchell; Co-PI: Eileen Williams; Co-PI; Allison McCulloch; Co-PI: Karen Keene **Value of grant:** $2,700

Invited Plenaries

the country.


Confrey, J. “Implementing the Common Core State Standards” Mathematics and Science Partnership Program Regional Conference. New Orleans Invited by the Department of Education,. 500 participants from MSP across the country.


Publications

Journal Articles


Confrey, J. (in press) Share fair or walk the plank. *Teaching Children Mathematics*


**Books**


**Book Chapters**


**Conference Proceedings**

Confrey, J., & Maloney, A. (May 2011). *Engineering [for] Effectiveness in Mathematics Education: Intervention at the Instructional Core in an Era of Common Core Standards*. Commissioned for the Workshop on Successful STEM Education in K-12 Schools, convened by the Board on Science Education with support from the National Science Foundation.


V. Report for Licensure Programs Only

- What service activities to schools were provided by program faculty and students other than student teaching and intern supervision?

Karen Hollebrands provided a half-day workshop to mathematics teachers in Chatham County from three high schools (15 teachers) on using Geometer’s Sketchpad to teach Algebra and Geometry

Allison McCulloch along with student members of NCSU NCCTM provided a student workshop for STEM Family night at a WCPSS elementary school.

Hollebrands, K. F., & Lee, H. S. (June 2011). Preparing to Teach Mathematics with Technology: Faculty Professional Development in Geometry, Data Analysis, and Probability. Co-taught one week institute for 18 faculty members from institutions across the country at the Friday Institute at NC State. This included Math education faculty from several NC universities (UNC-Wilmington, Fayetteville State Univ, UNC-Chapel Hill, Winston Salem State Univ).

Karen Keene, Richelle Dietz and Krista Holstein facilitated 2 summer workshops for teachers to prepare to use MINDSET materials in summer 2011.
Keene, K. (August, 2011). SMART for Teachers Technology Learning Workshops, Two days, 30 teachers, Chowan Middle School, Tyner, NC.

Karen Keene developed and cotaught with Dr. Alina Duca and Dr. Paola Sztajn, a new course to be required for preservice elementary teachers: Calculus.

**Karen Norwood** presented a workshop in July 2011 for teachers in Texas to introduce them to MINDSET materials.


**Karen Norwood** presented a workshop in October 2011 for teachers in Georgia to introduce them to MINDSET materials.

**Karen Norwood** presented a workshop in October 2011 at the North Carolina Council of Teachers of Mathematics (NCCTM) to introduce teachers to MINDSET materials.

**Karen Norwood** presented a graphing calculator workshop in December 2011 for preservice teachers.

**Karen Norwood** presented a workshop in April 2012 at the National Council of Teachers of Mathematics (NCTM) in Philadelphia, PA to introduce teachers to MINDSET materials.

- Identify LEAs/schools, if any, with whom there is a formal/approved collaboration for activities other than field placements for student teachers and interns. Include other service activities to schools and/or school districts. (Note: the annual faculty activity reports due in January include this item and can be a source of information.)

Karen Hollebrands, through the Scaling Up STEM Learning with the VCL project is working with 30 high school mathematics teachers from four school districts (Edgecombe, Greene, Chatham, Mooresville Graded School District). Face-to-face week-long summer institutes were provided during Summer 2010, 2011, and 2012 and ongoing online professional development and school visits provided during the school year.

- Describe program indicators for valuing a diverse and inclusive society.

**Future items to be included as the assessment system is implemented and data more easily accessed:**
Efforts to orient students and program faculty to the LEAD/SERVE conceptual framework and orientation to the program’s assessment plan and its implementation.
Data related to the program, such as: 1) GRE or MAT mean scores, or range, for those accepted into a graduate program; 2) mean SATs for those accepted into an undergraduate program; 3) number of applicants for the program and number of students accepted and enrolled; 4) aggregated scores and range for signature assignments and culminating products of learning; 5) number of candidates who passed or did not pass the appropriate gateways; 6) comparisons in achievement of degree-seeking and licensure-only or L-O candidates; 7) aggregated scores and range for Summative Evaluation of Student Teaching Observations; 8) aggregated scores and range for Student Teaching Portfolios.