

TE 804: Reflection and Inquiry in Teaching and Practice  
Mathematics Teaching, Learning, Curriculum, and Assessment  
Sections 010 W 9-12, 011 W 1-4, 012 Th 1-4

Instructors

Dr. Ruth Hetherington

Home: 810.227.6355

Mobile: 734.845.0736 [rbh@chartermi.net](mailto:rbh@chartermi.net)

Robert L. Kolnowski

Home 517-552-3111 Mobile: 313-585-3845 [kolnowsk@aol.com](mailto:kolnowsk@aol.com)

In this course we extend the work you began as seniors in the mathematics component of TE 401-2. With the MSU Teacher Preparation Program Standards as the underpinning, our work in TE 802/804 focuses primarily on Standard 1 – Knowing Subject matters and How to Teach Them.

The work we do in TE802/4 is intended not only to prepare you to teach during your internship, but to help you continue to develop the understanding, skills, disposition, and habits of mind to be a life-long learner of teaching, and a life-long learner of mathematics. The activities of our seminars are designed to engage you in learning and teaching standards-based mathematics. The mathematics component has three connected themes that are at the heart of Standard 1.

**First**, we investigate the *mathematics subject matter* you teach. Here we will investigate several mathematics strands Data Analysis/Probability and Geometry. In our seminar meetings, we will complete rich mathematical tasks and explore both the mathematics and the pedagogy imbedded in the tasks. This will entail developing a deeper understanding of the mathematics you teach in this area, noticing when your own knowledge is fragile or incomplete, and then finding the resources that can help you to continue to learn

**Second**, we will focus on one of the central jobs of teaching – *planning and implementing a mathematics curriculum*. We will examine focus our efforts on standards-based curriculum and instruction for elementary school children and look carefully at how instructional materials make mathematical connections for students in their elementary years. We will investigate how curriculum materials address content standards of the district, state (MI), and national organization (NCTM).

We will begin the work of planning and implementing instruction by creating short problem solving lessons to be planned and taught in your classrooms early in the school year. You will plan a five-day mathematics unit in semester one and teach this unit early in your lead teaching time. This unit will be based on the curriculum materials used in your school and classroom but will incorporate the three-part lesson plan structure, which we will explore in our seminars.

**Third**, we explore high-quality *mathematics assessment* and the links among assessment and curriculum, teaching and learning. In the service of assessment, you will gather data from your students and learn to assess their work to determine what they understand and concepts they struggle to master. We will focus on the evidence of understanding that is present in student work and consider the multiple ways to assess students' mathematical abilities. We investigate how assessment can be used to monitor student learning and to inform planning and allow for adjustments in instruction to suit the needs of students. You will strive to adapt rich tasks for your grade level and create a variety of rubrics to use to assess the work of your students.

**Required Resources:**

- Van de Walle, John A., *Elementary and Middle School Mathematics: Teaching Developmentally*. (2001) Fourth Edition, Boston, MA., Addison Wesley Longman, Inc.. [Graduates (2003) should have this text from Spring TE 402.] ISBN 0-8013-3253-2
- Weinstein, C., and Mignano, A., *Elementary Classroom Management: Lessons from Research and Practice*, (2003) Third Edition, Boston, McGraw Hill.

ISBN )-07-232243-8 [Interns will purchase this text for several 800 level courses. You will need only one copy and will find it listed on other syllabi.]

- CD to be purchased from copy center in Erickson Hall. Details of purchase to be provided in class.

#### **Administration details.**

- All assignments are to be typed; no hand written papers will be accepted for credit.
- Late assignments will be penalized 10% for each class meeting the assignment is not handed in. Extenuating circumstances must be negotiated with the instructor.
- Attendance at seminars is critical. Much of our work is interactive and cannot be made up by reading and doing problems. Every effort must be made to attend each seminar. Students must call the instructor in the case of severe illness the night before the class meeting or morning of class by 7:15. Home and mobile phone numbers are listed above. Failure to do so will be an unacceptable absence and may result in points lost for participation in the course.
- Office hours: due to your commitments in the classroom office appointments are difficult. I will be available after class from 12-1 for conferencing. Special arrangements can be made when necessary. E-mail communication is an option for discussion.

#### ***From the Professional Criteria:***

- "Reliability and Responsibility - Teacher candidates must generally have been present and on time for professional commitments, including classes and field experiences. Teacher candidates must have regularly communicated about necessary absences or lateness according to the guidelines in the Professional Conduct Policy. Teacher candidates must have a record of meeting deadlines for course assignments and program requirements. A pattern of repeated absences, lateness, and failure to meet deadlines in courses or fieldwork is not acceptable. Any form of dishonesty (lying, plagiarism, forged signatures, etc.) about these and other requirements is not acceptable."

#### ***From Spartan Life:***

- "Integrity of Scholarship and Grades - The principles of truth and honesty are recognized as fundamental to a community of teachers and scholars. The University expects that both faculty and students will honor these principles and in so doing protect the validity of University grades. This means that all academic work will be done by the students to whom it is assigned, without unauthorized aid of any kind. Instructors, for their part, will exercise care in the planning and supervision of academic work, so that honest effort will be positively encouraged."
- "Protection of Scholarship and Grades - The principles of truth and honesty are fundamental to the educational process and the academic integrity of the University: therefore, no student shall claim or submit the academic work of another, as one's own. No student shall procure, provide, accept, or use any materials containing questions or answers to any examination or assignment without proper authorization. No student shall complete or attempt to complete any assignment or examination for another individual without proper authorization, allow any examination or assignment to be completed for oneself, in part or in total, by another without proper authorization. No student shall alter, tamper with, appropriate, destroy or otherwise interfere with the research, resources, or other academic work of another person, fabricate or falsify data or results."

#### **Semester 1 Graded Assignments**

- Investigate your school's curriculum materials with a focused agenda. Create the outline of a lesson plan for an "mathematical investigation" from material in your classroom curriculum.

- Create a data analysis lesson plan based on the curriculum materials used in your school or other standards-based curriculum, adapting the lesson to the *Before-During-After (B-D-A)* format. (This will be a lesson designed for small group instruction. You should plan to teach this lesson to one or more small groups in your placement.)
- Create a lesson plan based on the curriculum materials used in your school or other standards-based curriculum, adapting the lesson to the *B-D-A* format. (This will also be a lesson designed for small group instruction that you would be allowed to teach to one or more small groups in your placement.)
- Plan a five-lesson mathematics unit using the *B-D-A* format. This must be a series of connected mathematics lessons on one topic, which can be taught to your entire class. (You should teach this unit, either in the 1<sup>st</sup> or 2<sup>nd</sup> short lead teaching or in the early weeks of your long lead teaching.)

### **Semester 2 Graded Assignments**

- Write a 4-5-page reflection paper detailing what you learned about the connections among curriculum, planning, and instruction by teaching your planned unit.
- Adapt a given task to your grade level and create teacher and student materials necessary to use the task with your students. (You will use this task with your students and collect the work of your students on this task.)
- Formulate 2-level and 4-level rubrics to assess the previously mentioned adapted mathematics task.
- Use the rubrics to assess student work and share the task, rubrics, and four levels of student work in seminar class.
- Create rubrics to accompany 5 rich tasks to be used in your classroom
- Complete an assessment project which requires you to:
  - Gather **five** samples of student work on meaningful mathematics tasks from each of **three** students. You will collect 5 samples of work from 3 selected students, one per week, beginning in your long lead teaching.
  - Create rubrics to assess the above mathematical tasks.
  - Use the rubrics to assess the students' written work.
  - Analyze the work of each student and complete a Documenting Student Understanding Grid for each.
  - Write a paper that identifies mathematical strengths and weaknesses of **one of the three** students from whom you have gathered samples of work.

### **TE 802 Total points 100, 50 from Mathematics, and 50 from Literacy.**

#### Semester 1 Mathematics points:

- 5 P (5) = present, professional, prompt, prepared, and participating at each seminar. Points will be lost in this category when students miss class, are late, come without materials, or fail to participate actively in discussions and activities.
- 5 Curriculum Investigation with lesson plan outline.
- 10 Lesson plan Data Analysis – mathematical investigation
- 10 Lesson plan optional topic – mathematics investigation
- 20 Unit plan, 5 consecutive lesson plans for connected mathematics instruction

### **TE 804 Total points 100, 50 from Mathematics, and 50 from Literacy.**

#### Semester 2 Mathematics points:

- 5 P (5) = present, professional, prompt, prepared, and participating at each seminar.
- 5 Adapt a Rich Task for your students
- 5 Create and apply 2 Rubrics for your Rich Task on student work from your class
- 10 4-Page Reflection Paper: Teaching the Prepared Unit

- 5 Rubrics for 5 Tasks of assessment project
- 20 Assessment Project

The points earned in the Mathematics seminars will be added to those earned in the Literacy seminar and the following 4.0 Grading Scale Conversion will be used to determine your semester grade:

4.0	100-93
3.5	92-86
3.0	85-79
2.5	78-70
2.0	69-63
1.5	62-55
1.0	54-49
0.0	48-00