A child's life is like a piece of paper on which every passerby leaves a mark.

_Ancient Chinese Proverb_

EDML 583
Methods and Materials for Teaching Mathematics in the Middle Grades
Fall 2009

I. Descriptive Information
A. Course Number and Title: EDML 583-Methods and Materials for Teaching Mathematics in the Middle Grades
B. Course Description: A study of methods, techniques, and materials of instruction appropriate to mathematics teaching in the middle school.
C. Course Credit: Three (3) semester hours
D. Prerequisites: Entrance into the Professional Program in Middle Level Education, Corequisite: EDML 598
E. Intended Audience: Undergraduate and graduate students preparing to teach mathematics at the middle school level.
F. Instructor: Beth R. Oliver, betholiver2@yahoo.com, (803)622-5384, office: Wardlaw 107
G. Office Hours: Tuesdays: 8:30 – 10:30 or by appointment. I will also be available at Dreher High School (253-7000) several hours a week.
H. Many class meetings will occur at Hand Middle School.

II. Course Goals and Objectives
A. Goals
1. To familiarize prospective mathematics teachers with the curriculum for middle level mathematics.
2. To develop instructional techniques and strategies needed to teach the middle mathematics curriculum effectively.

B. Objectives. The student will be able to:
1. Describe the middle school mathematics curriculum in relation to the NCTM Standards, the South Carolina Mathematics Framework, and state-adopted mathematics textbooks;
2. Develop course and unit plans for teaching middle school mathematics in accordance with ADEPT Performance Standards 1 and 2;
3. Develop and teach lessons designed to allow learners to construct and discover mathematical concepts;
4. Develop and teach lesson plans involving Manipulatives;
5. Develop and teach lesson plans using calculators, computers, and other instructional materials for teaching mathematics;
6. Develop and interpret tests and other assessment strategies in accordance with ADEPT Performance Standards 3 and 7;
7. Manage effectively the classroom learning environment in accordance to ADEPT Performance Standard 9;

Every day is a gift.
A child's life is like a piece of paper on which every passerby leaves a mark.

_Ancient Chinese Proverb_

III. Required Texts and Materials

Course Reader (available at Universal Copies)
ADEPT Handbook and ADEPT Policy and Procedures Manual, (Also required for EDML 598)
South Carolina Mathematics Standards and Support Documents (available on the Web or on demand at Universal Copies)


Class Notes from Blackboard – print each week and bring to class
Printouts from various web sites

**Supplemental**


Various South Carolina adopted textbooks
Issues of the Mathematics Teacher ([http://www.nctm.org/mt](http://www.nctm.org/mt)) and Mathematics Teaching in the Middle School ([http://www.nctm.org/mtms](http://www.nctm.org/mtms))

**Helpful Links:**

National Council for Teachers of Mathematics (NCTM) home page: [http://nctm.org](http://nctm.org)
NCTM teaching resources: [http://illuminations.nctm.org](http://illuminations.nctm.org)

- Explore our library of 102 online activities that help to make math come alive in the classroom or at home
- collection of 541 lessons for preK-12 math educator
- learn about NCTM’s _Principles and Standards for School Mathematics_
- hundreds of exemplary online resources, as identified by an editorial panel


IV. Academic Requirements

1. **Daily homework assignments/classroom participation.** Examples of daily homework assignments include bringing samples of your coaching teachers’ long-range plans to class, brainstorming a list of possible mathematics review games, participating in Blackboard

Every day is a gift.
A child's life is like a piece of paper on which every passerby leaves a mark.
Ancient Chinese Proverb

discussions, etc. Examples of participation include making informed comments during
discussions, participating in assigned group work, presenting content, etc. (10%)

2. **Making Your First Day Count.** Create the following tools to use on your first day as a
certified teacher: 1) an introduction of yourself, 2) a student information worksheet, 3) an
icebreaker and 4) a fun math challenge. **Due August 27.** (10%)

3. **Written Lesson Plan.** Write a lesson on a mathematics topic selected by the instructor.
Format options will be discussed in class. **Due September 10.** (10%)

4. **Inquiry Micro-teaching. (10 - 15 minutes).** Write an inquiry based lesson plan on a topic
selected by the instructor. You will teach this lesson to our class. You are strongly
couraged to engage our class in all or part of the activity that you used to motivate the
lesson. **Due September 24.** (15%)

5. **Grading Papers Assignment.** You will grade sample student tests (provided by the
instructor), analyze the results and report your findings and judgements based on the data.
Sample of 10 un-graded student tests – due September 24, remainder of assignment due
October 15. (10%)

6. **Self-critique of Teaching a Lesson Involving Manipulatives.** Write a lesson plan involving
the use of manipulatives. Videotape yourself teaching the manipulatives lesson to your class
at your internship site. Watch your videotape and write a critique of your lesson using
ADEPT Performance Dimensions 4-9. In addition, be sure to include the overall strengths of
the lesson and recommendations for improvement of the lesson. You must turn in the DVD
of you teaching the lesson. Your teaching on the DVD must be audible and visible. Please
plan ahead in case you need to tape a second lesson. **Due November 5.** (15%)

7. **Unit Assessment Packet and Review Game Presentations.** Create a comprehensive
assessment plan and review game for a unit of study selected by the instructor. To avoid
duplication, the instructor will approve review game formats on a first-come, first-served
basis. **Due November 19.** (15%)

8. **Final Exam. Thursday, December 10 from 12:30 – 3:00.** (15%)

**Graduate Academic Requirements.** Students registering for graduate credit are required to
complete additional requirements as developed by the course instructor. This requirement is
assigned 10% of the graduate student’s final grade. To accommodate for this assignment, the
“Inquiry Micro-teaching” and the “Unit Assessment Packet and Review Game Presentations”
will each be lowered from 15% to 10% of the graduate student’s final grade.

**V. Administrative Requirements**
Class participation is an important aspect of this course; students are strongly encouraged to
attend each class. All assignments and presentations must be completed on or before the due
dates specified in section VI. According to the USC attendance policy, absences beyond 10% are considered excessive and may result in a 5% deduction for each absence above the 10%.
A child’s life is like a piece of paper on which every passerby leaves a mark.

_Ancient Chinese Proverb_

Classroom Rules
1. Show respect to your instructor and classmates at all times.
2. Eating is **NOT** permitted during class.
3. Drinking bottled water is permitted during class. (Other drinks are not permitted.)
4. Turn cell phone ringers off during class. No text messaging during class.
5. Follow all University Rules.

**Consequences for Breaking the Classroom Rules**
1. Verbal Warning.
2. Conference with instructor.

Note: Any disrespectful or disruptive behavior may result in your being asked to leave the class, and may result in your dismissal with a “WF” (Withdraw Failing), and/or a referral to the Office of Student Judicial Programs.

**VI. Evaluation**
All materials will be graded using rubrics. Each rubric score will be converted to a percentage score. The final grade for credit will be the weighted average of the assignments in the table below:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Participation/Homework</td>
<td>10%</td>
<td>Daily</td>
</tr>
<tr>
<td>Making Your First Day Count</td>
<td>10%</td>
<td>August 27</td>
</tr>
<tr>
<td>Written Lesson Plan</td>
<td>10%</td>
<td>September 10</td>
</tr>
<tr>
<td>Inquiry Micro-teaching</td>
<td>15%</td>
<td>September 24</td>
</tr>
<tr>
<td>Grading Papers</td>
<td>10%</td>
<td>October 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Submission of 10 un-graded student tests from the same unit with student names omitted due September 24)</td>
</tr>
<tr>
<td>Self-Critique of a Manipulatives Lesson</td>
<td>15%</td>
<td>November 5</td>
</tr>
<tr>
<td>Unit Assessment Packet and Review Game Presentations</td>
<td>15%</td>
<td>November 19</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15%</td>
<td>Dec. 10 from 12:30 – 3:00</td>
</tr>
</tbody>
</table>

93-100=A 86-92=B+ 80-85=B 76-79=C+ 70-75=C 60-69=D 0-59=F

**VII. Major Topics**
1. Introduction to Course and Mathematics Teaching
2. Curriculum: Standards, Framework, Textbooks
3. Developing Courses and Units
4. Constructivism, Inquiry and Discovery Learning

_Every day is a gift._
A child’s life is like a piece of paper on which every passerby leaves a mark.

Ancient Chinese Proverb

5. Knowledge, Comprehension, and Algorithmic Skills
6. Problem Solving
7. Technology and Manipulatives
8. Classroom Management
9. Applied Methodologies: Cooperative Learning and Active Learning
10. Assessment and Testing
11. Beginning Teaching and Professionalism

VIII. Code of Academic Responsibility
It is the responsibility of every student at the University of South Carolina at Columbia to adhere steadfastly to truthfulness and to avoid dishonesty, fraud, or deceit of any type in connection with any academic program. Any student who violates this rule or who knowingly assists another to violate this rule shall be subject to discipline.

IX. Tentative Course Outline
All major assignments are listed with their associated due dates. Homework and Participation grades will be assigned weekly. I have listed the detailed homework and participation grades for the first two weeks to give you an idea of what to expect. You will receive a detailed agenda each week.

August 20
Focus Strand: Numbers and Operations
Topics: Introductions, Course Overview, Making Your First Day Count, Standards, Long Range Planning

Monday, August 24 (midnight)
Email me 3 quotes that you like – at least one must be math-related. Ex.: "The only angle from which to approach a problem is the TRY-Angle." (10)*

August 27
Focus Strand: Numbers and Operations

Major Assignment Due: #1 – Making Your First Day Count (10% of course grade)
Please email me your assignment as one document. Submit the hardcopy WITH RUBRIC in class. Students will be selected to present parts of this assignment.

Participation Due:
Bring to Class:
- a blank student information sheet used by one of the teachers at your school (10)*

Every day is a gift.
A child’s life is like a piece of paper on which every passerby leaves a mark.

Ancient Chinese Proverb

- all standards documents (Grade Band Format, Overview for Grades 6, 7, 8 and Elementary Algebra and Geometry, Appendix on Revised Blooms Taxonomy, and Support Documents for Grades 6 –8 (10)*
- your ADEPT Manual (10)*
- your completed Practice Test #1 (10)*

Be ready to discuss:
- the middle level mathematics standards documents with particular attention to the numbers and operations strand for grades 6-8
- APS 1 in the ADEPT Manual

Monday, August 31 (midnight)
While you are teaching a mathematics lesson, a student raises her hand. You call the student’s name and she says, “Why do I have to learn this? Email me 3 possible responses to this question. Ex.: “The more you know, the more options you have available.”

September 3
Focus Strand: Numbers and Operations
Topics: Short Range Planning, Student Thinking about Mathematics

Required: Please always bring a copy of the standards to class. We will refer to this document constantly.

Participation Due:
Bring to Class:
- the mathematics textbook(s) from your internship. If you are not able to obtain the textbook that the students are using, please ask the coaching teacher to let you borrow as many mathematics textbooks as possible. If you are not able to borrow any math textbooks at all, please bring a note signed by your coaching teacher that states this is the case. You need as many resources as possible to help you write great lesson plans. (10)*
- your created lesson plan for a topic assigned by me. Students will be selected at random to present their lessons. Be sure that your lesson plan meets the requirements of the Generic Middle Level Lesson Plan Rubric. (15)*
- rough draft of a Long Range Plan for your class using the template found on Blackboard (15)*

Be ready to discuss:
- the article: “Social Sense-Making in Mathematics; Children’s Ideas of Negative Numbers by S. Mukhopadhyay. (found in your course reader)

Every day is a gift.
A child's life is like a piece of paper on which every passerby leaves a mark.

*Ancient Chinese Proverb*

September 10

**Focus Strand:** Geometry  
**Topics:** Short Range Planning

**Major Assignment Due:** #2 – Written Lesson Plan (10% of course grade) Please email me your assignment. Submit the hardcopy *WITH RUBRIC* in class. Students will be selected to teach parts of this assignment.

September 17

**Focus Strand:** Geometry  
**Topics:** Executing lesson plans

September 24

**Focus Strand:** Geometry  
**Topics:** Executing lesson plans

**Major Assignment Due:** #3 – Inquiry Micro-teaching (15% of course grade) Please email me your assignment. Submit the hardcopy *WITH RUBRIC* in class. Students will teach these lessons.  
**Part of a Major Assignment Due: from Assignment #4** Please submit 10 ungraded tests from the same unit. Remember to blackout any names or student identification on each test.

October 1

**Focus Strand:** Algebra  
**Topics:** Executing lesson plans

October 8

Enjoy your Fall Break – NO CLASS.

October 15

**Focus Strand:** Algebra  
**Topics:** Assessing learning

**Major Assignment Due:** #4 – Grading Papers (10% of course grade) Please email me your assignment. Submit the hardcopy *WITH RUBRIC* in class.

October 22

**Focus Strand:** Algebra  
**Topics:** Assessing learning

Every day is a gift.
A child's life is like a piece of paper on which every passerby leaves a mark.

*Ancient Chinese Proverb*

October 29

**Focus Strand:** Measurement
**Topics:** Assessing learning

November 5

**Focus Strand:** Measurement
**Topics:** Assessing learning

**Major Assignment Due:** #5 – “Self-Critique of a Manipulatives Lesson” (15% of course grade) Please email me your lesson plan and critique. Submit the DVD, and the hardcopy of the lesson plan and critique WITH RUBRIC, in class.

November 12

**Focus Strand:** Measurement
**Topics:** Putting It All Together

November 19

**Focus Strand:** Data Analysis and Probability
**Topics:** Putting It All Together, Gender

**Major Assignment Due:** #6 – Unit Assessment Packet and Review Game Presentations (15% of course grade) Please email me all parts of this assignment. Submit the hardcopies WITH RUBRIC, in class.

November 26

Enjoy your Thanksgiving Holiday – NO CLASS

December 3

**Focus Strand:** Data Analysis and Probability
**Topics:** Classroom Management, Working Together With Your Colleagues and Your Community

December 10

12:30 – 3:00 Final Exam

Every day is a gift.