



University of Memphis College of Education

College of Education  
The University of Memphis  
*Instruction and Curriculum Leadership*  
**ICL 7502-001**  
**Teaching Mathematics in the Secondary School**  
**Fall 2009**

## College of Education Norms

**I take 100% responsibility.**  
**I seek equity of voice.**  
**I am willing to talk about sensitive issues.**  
**I listen for understanding.**  
**I appreciate the strengths and contributions of others.**  
**I bring positive energy and encouragement to the team.**  
**I commit to the mission of the college.**

### **ICL 7502-001, Teaching Mathematics in the Secondary School** **Ball Hall 210**

Dr. Katherine Abraham, Ball Hall 404C, 678-3416; fax: 678-3881; kaabrahm@memphis.edu  
Office Hours: Tues., 1-4; Thurs., 1-4. Other hours by appointment.

#### **Description:**

Consideration of principles and techniques of teaching mathematics in secondary schools including study and evaluation of materials of instruction.

**Prerequisites:** MAT – Admission to TEP; MS and Ed.D. - None

#### **Text:**

Brahier, D. J. (2009). *Teaching secondary and middle school mathematics*. Boston: Allyn and Bacon.

**Support of Conceptual Framework:** This course is designed for pre-service teachers working with diverse communities to develop teaching knowledge and skills in secondary mathematics.

**Key Assessments:** Mathematics Culture Profile, Unit Plan, Problem Solving Activities, Mathematics History Project, Clinical Faculty Evaluation

#### **Course Objectives:**

- A. Study theoretical bases for teaching secondary school mathematics.
- B. Examine current research and its practical applications to teaching mathematics.
- C. Study issues, trends, and recommendation of professional mathematics organizations.
- D. Evaluation of instructional materials, resources, media, and technology for teaching secondary mathematics.

**Requirements and Grading:**

1. Mid-term Exam	15%
2. Mathematics Culture Profile	5%
3. Unit Plan	20%
4. Portfolio Reflections	5%
5. Class Participation	10%
6. Problem Solving Activities	5%
7. Mathematics History Project	10%
8. Field Experiences (8 hours)	10%
9. Final Exam	20%

**Grading policy:** A = 90 - 100, B = 80 - 89, C = 70 - 79, D = 60 - 69, F = Below 60, I = Incomplete  
The plus/minus grading system will not be used.

**Handouts:** Copies of the syllabus, project information, field experience evaluation form and other handouts will be available at [umdrive.memphis.edu/kaabrahm/ICL7502](http://umdrive.memphis.edu/kaabrahm/ICL7502). You will need Microsoft Word, which is available in the computer labs.

Date	Topic	Text Readings/Projects due
09/03	Introduction, syllabus, schedule, class format. <i>Principles and Standards for School Mathematics</i>	
09/10	Problem Solving Unit Goals and Objectives	Chapters 1 & 5 Draft of Unit Goal
09/17	Math Culture/Ethnomathematics Unit Planning	Chapters 2 & 6 Unit Goal and Three Objectives
09/24	History of Math Lesson Planning	Chapter 7 Unit Plan Outline with Lesson Objectives
10/01	Manipulatives Algebra	Chapter 8 Draft of First Lesson Plan
10/08	Assessment	Chapter 9 Math Profile
10/15	Mid-term Exam	
10/22	Calculators	Chapter 10 Draft of Second Lesson Plan
10/29	Geometry and Technology	Chapter 3 History of Mathematics Project
11/05	Communication in Mathematics	Chapter 4 Draft of Third Lesson Plan
11/12	Technology	Chapter 11
11/19	Equity in the Classroom	Chapter 12 Unit with Three Lesson Plans
12/03	Presentations	Portfolios Due
12/17	Final Exam, 5:00-7:00	

Note: Registration for Spring session begins November 9

**\*\*\*\*\*The syllabus is subject to change as the semester unfolds. Students are responsible for keeping up with changes and assignment dates. We will revisit and update the syllabus periodically.\*\*\*\*\***

**Attendance Policy:** You are expected to be in class in a timely manner and to actively participate in all activities. Your first absence is a gift. Every two (2) absences thereafter will lower your grade one letter grade in the class. Every tardy will result in the subtraction of 5 points from your Class Participation grade. You should keep me informed at all times and call me as needed.

**Make-up policy:** Weekly assignments will be accepted only on the night they are due. Other assignments turned in past the due date will be subject to grade penalties. For each week the assignment is past due, 10 points will be deducted from the grade for that assignment. Example: If the assignment is due September 10, 10 points will be deducted between that date and September 17, 10 more points between September 17 and 24, and 10 more points between September 24 and October 1. After three weeks the assignment will not be accepted. If you miss class, you should contact another student in the class for notes and class assignments.

**Email:** All notification of placements and other important class messages will be sent through your official University email account. No other email addresses will be used. If you wish to forward your official email to another address, the procedure is located at [iam.memphis.edu](http://iam.memphis.edu).

**Notice: All cell phones, beepers, and other electronic equipment must be turned off and put away while in the classroom.**

**Children in class:** Since the University will no longer routinely accommodate minor children in campus workplaces, classrooms, or unsupervised circumstances on campus, there can be no children in the classroom. "Presence in classrooms is restricted to properly enrolled students or visitors with legitimate purpose, who may be adults or minors. Instructors of record are responsible for ensuring that individuals who attend their classes are properly enrolled or have been invited for the purpose of making special announcements, guest lecturing, or another authorized reason. Instructors are also responsible for addressing situations when unauthorized individuals attend their classes. Instructors have the discretion to make infrequent exceptions due to temporary, unforeseen emergencies. In these cases, children must remain in the classroom and are not allowed to sit in the hallway or be unsupervised in other locations on campus." (Policy UM1645)

**Americans with Disabilities Act:** The University of Memphis does not discriminate on the basis of disability in the recruitment and admission of students, the recruitment and employment of faculty and staff, and the operation of any of its programs and activities, as specified by federal laws and regulations. The student has the responsibility of informing the course instructor (at the beginning of the course) of any disabling condition, which will require modification to avoid discrimination. Faculty are required by law to provide "reasonable accommodation" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels. Students with disabilities are encouraged to contact Student Disability Services, 215 Scates Hall, phone 678-2880.

**Academic integrity:** I expect professional and courteous participation in all course meetings, activities, and assignments. This includes, but is not limited to, items outlined in The University of Memphis *Code of Student Rights and Responsibilities*. If, upon investigation, I find that you misrepresented yourself or your work for a course assignment, I will follow the guidelines established by the University of Memphis regarding cheating and/or plagiarism. This could mean a failing grade for the assignment and may include a failing grade for the course. Refer to your student handbook (*Code of Student Rights and Responsibilities*) and <http://saweb.memphis.edu/judicialaffairs/> (Office of Judicial and Ethical Programs) for details.

**Dispositions:** For information on College of Education Dispositions please go to <http://coe.memphis.edu/PDF/DispositionsAndRetention.pdf> (Policies and Procedures for Assessing Teacher Candidates Dispositions at the University of Memphis).

### **\*\*\*General Information about Projects\*\*\***

1. Projects must be word processed in a readable font such as 12 point Times or 10 point Arial type in black ink, double spaced, with page numbers. You must follow the guidelines in the 5th edition of the Publication Manual of the American Psychological Association.
2. You are responsible for printing all papers and turning them in. Staple the pages of each document; do not use paper clips or other fasteners.
3. Do not use plastic sleeves on any documents.
4. Writing is an assumed skill in the course. Points can be deducted for writing errors including informal language, poor organization, spelling errors, and grammatical mistakes. Please proofread and get outside assistance if necessary.

### **Portfolio**

The portfolio will include all materials completed for class except the exams.

1. Sections for the portfolio are (1) Unit with Three Lessons, (2) Math Culture Profile, (3) Math History Project, (4) Field Experience, (5) Problem Solving Activities, and (6) Textbook Responses and in-class writings.
2. Each section will have an introduction which discusses what you learned from the activity.
3. Your portfolio will have a preface and a closing statement. Include in those statements reflections about the class and the materials included in your portfolio. The preface should be a general statement on your perceptions of teaching mathematics. The closing statement should summarize the reflections on all the activities completed this semester and present the ideas common to the observations.
4. The portfolio is due December 3. Since the Unit is due November 19, you do not have to include a second copy of it. However, you must include the section and the introduction.
5. Please remember not to use plastic sleeves.

### **Unit Plan**

The following are the criteria for preparing a unit plan to meet the requirements for ICL 7502.

1. You will select a unit within the secondary mathematics curriculum and develop specific lessons for teaching that unit.
2. You will plan a unit of no less than eight hours of classroom instruction, using the assigned format.
3. You will develop three consecutive lesson plans from that unit with varied and specific instructional activities. One of the lessons must integrate the use of technology.
4. The instructional plan must also include the written evaluation strategy (i.e., homework, tests) to test mastery of the specific unit objectives.
5. The plan must use the formats given in class.
6. Each student will make an oral presentation (15 minutes long) of one lesson in this unit. The instructor should be given a copy before the presentation. Students are required to use manipulatives, handouts, transparencies, or other visual materials for the presentation. The class should be actively involved in the lesson. Hands-on materials must be part of the presentation.
7. To aid in the development of the unit, the following information will be turned in on the listed dates:

<u>Information</u>	<u>Date Due</u>
Unit goal draft	09/10
Unit goal and three objectives	09/17
Unit plan outline with lesson objectives	09/24
First lesson plan draft	10/01
Second lesson plan draft	10/22
Third lesson plan draft	11/05
Unit with three lesson plans	11/19

8. More information will be given in class.

### **Class Participation**

The grade for class participation will include reflections on weekly reading assignments, turning in drafts of the unit as listed above, presentation of the unit, and participation in in-class activities. Solutions to weekly problems and chapter reflections will be accepted only on the night they are due.

### **Chapter Reflections**

Each week bring in two copies of a typed response to the weekly assigned questions in the textbook. One copy will be turned in at the beginning of class. The other will be used in small group discussion. These will be part of the class participation grade. Responses will be accepted only on the night they are due.

### **Problem Solving Project**

Each week you will be given two non-standard problems. These will be on the umdrive or eCourseware. The following week bring in two copies (one to turn in and one for discussion) of your solution (or attempt to solve) the problems. The process(es) for solving the problems and their solutions will be discussed in class each week. You will be assessed on the information turned in and on your participation in the classroom discussion.

### **Mathematics Culture Profile**

You will submit a profile of yourself from a mathematical culture viewpoint. This profile will include mathematical information using the following types of information: family history, education, profession, mathematics background, ethnicity, religion, and other areas to be discussed in class. The focus must be on mathematics. This profile should be one page in length and word processed.

### **Field Experiences**

1. You will not be given your field placement until you complete the TBI Background Check and the DCS Prior Approval and receive approval from both of them. Your name will not be submitted for a school assignment unless approval comes from both TBI and DCS. Failure to complete this will result in not completing the field experience and repeating the course. The forms and procedures are available at <http://coe.memphis.edu/field-experience.htm>.
2. You will participate in a secondary mathematics class for eight hours. You will work with small group instruction for four hours and with whole class instruction for four hours. Small group instruction may include providing assistance during group activities and supervised practice, providing individual instruction to students, and similar activities. Whole class instruction is the presentation of a lesson or a portion of a lesson to the whole class. For two of those hours you may team teach with the classroom teacher. You must present an entire lesson for each of the other two hours. Plans for each of these lessons should be made in conjunction with the classroom teacher.
3. You will submit a written summary of the classroom experiences. The classroom teacher will use the Clinical Evaluation Form to assess your teaching.
4. You will be expected to work out the dates and times of each visit with the classroom teacher. You should plan on four sessions of two hours each. All visits should be completed at the times specified by the cooperating teacher. Once a schedule is worked out, you are expected to follow it as agreed upon. If an emergency occurs, you must notify the teacher immediately and reschedule the visit as soon as possible.
5. Professionalism requires proper dress, conduct, and adherence to professional ethics. You are expected to conform to the dress and conduct standards of the cooperating school. Law provides for the privacy of student records and information. Information on students in cooperating schools is not to be revealed or discussed outside the professional realm. Students' names are not used when discussing experiences.
6. You must keep a sign-in sheet of the time spent in the field. This form is available at <http://coe.memphis.edu/field-experience.htm> and will require the signature of the classroom teacher.

You are responsible for keeping copies of all clinical experiences sheets for later use when applying for student teaching.

7. **Those of you in full-time teaching positions** and holding an alternative license will complete the eight hours in your classrooms by documenting one class period for eight consecutive days, not including test days. You will complete the summary as described below. You must be observed for at least two hours by a licensed classroom teacher or an administrator who can evaluate your teaching using the evaluation form. You do not need a sign-in sheet.
8. Lesson plans, the written summary, the teacher evaluation, and a copy of the sign-in sheet will be turned in with the portfolio.
9. Failure to complete the field experience as outlined above will result in failure of this course.

**The top of the first page of the summary must include your name, dates and times in the field, school, classroom teacher, grade level, and subject area. Use the statements below as headers as you address each item.**

1. Describe the students that you taught (number, age, grade level, gender).
2. Describe the physical classroom environment. Use a drawing if you like.
3. Describe the kinds of instructional activities you were involved in during the eight hour experience. Give a brief summary of each class period. Include in your discussion reflections on the students' interactions with you. Include at least one specific example in your description.
4. Briefly describe the kinds of instructional materials and media you used. Discuss the ways in which these things were used by you and by the students. Include at least one specific example.
5. Discuss the mathematics content you taught. Reflect on your knowledge of the content, your confidence in teaching it, and the student response to the content.
6. Describe what methods you used to encourage appropriate behaviors and to discourage inappropriate behaviors in the classroom. Describe how the students responded to these methods. Include specific examples from your experience.
7. Discuss two or three strengths you have as a teacher.
8. Discuss one weakness you perceived in your teaching. What would you do to improve that weakness and your teaching in general?
9. How has this experience influenced your desire to teach?