CUR 487
Teaching of Secondary Mathematics

INSTRUCTOR: Dr. Stella Wear  Office: Walters 270D  Phone: 846-4512
Email: swear@deltastate.edu

OFFICE HOURS:  Monday and Wednesday  Tuesday and Thursday  Friday
10 – 11:00; 2 – 4  9:15 – 10:45  10 – 11
Other times by appointment.

MY CLASS TIMES:  Monday, Wednesday, Friday  Tuesday and Thursday
8 – 8:50; 11 – 11:50  8 – 9:15
6 – 8:30 (Monday only)

Course Designation

CUR 487. TEACHING OF SECONDARY MATHEMATICS. Place of mathematics in
curriculum, aims and objectives of mathematics teaching, organization and teaching of high school
mathematics, planning of lessons, and other topics of interest to prospective teachers. Prerequisite: a major
or minor in mathematics. 3

Text
No textbook specified. You will receive a variety of materials to work with throughout the
semester. See collateral list of reading materials below.

Introduction
This course is designed to provide the prospective mathematics teacher with methods and
techniques for teaching secondary school mathematics. The current state of the mathematics curriculum,
the goals and objectives of mathematics instruction, and instructional procedures for teaching secondary
school mathematics will be emphasized. Even though this course is not a mathematics content course,
mathematics content will be our vehicle and will definitely be considered. Knowledge of the content
suitable for the secondary mathematics classroom will be extremely important.

General Course Goals
1. To acquaint the student with NCTM's STANDARDS, the state curriculum for mathematics,
and local curriculum guides.
2. To develop the student's awareness of STAI requirements and INTASC Standards.
3. To develop the student's ability to plan appropriate instructional activities to teach
mathematical concepts.
4. To familiarize the student with current secondary school mathematics textbooks and teaching
materials.
5. To acquaint the student with sources of supplementary materials and suggested teaching
techniques for the mathematics classroom.
6. To develop the student's ability to plan and teach a lesson using appropriate teaching strategies,
materials and technology.
7. To develop the student's ability to evaluate both student and teacher performance.

Subject Matter or Content to be Considered
1. NCTM STANDARDS
2. Mississippi Mathematics Framework
3. Writing objectives
4. Planning a lesson
5. Preparing a portfolio
6. Teaching mathematical concepts
7. Classroom questioning
Specific Course Objectives

At the conclusion of this course, the prospective secondary teacher will be able to do the following:

1. Discuss the objectives from the Mississippi Mathematics Framework and NCTM’s recommendations for any secondary mathematics course.
2. Write objectives of mathematics instruction in behavioral terms.
3. Develop appropriate instructional activities and select appropriate materials (including manipulative materials) for teaching mathematical concepts and skills.
4. Write objectives covering all levels of Bloom’s taxonomy.
5. Discuss the benefits of membership in the NCTM and MCTM.
6. Describe the features of the Mathematics Teacher and Mathematics Teaching in the Middle School.
7. Describe the material included in the teacher's edition of secondary mathematics textbooks.
8. Compare the content of current secondary textbooks to the STANDARDS and the Mississippi Mathematics Framework.
9. Discuss criteria needed to meet each indicator of STAI.
10. Prepare a portfolio using the instructions of the STAI.
11. Evaluate classroom questions using the criteria discussed in class.
12. Write a set of questions to be used in a classroom to develop a selected mathematical topic.
13. Describe types of activities that might be used for motivation.
14. Select or develop activities to be used for motivation for selected mathematical topics.
15. Describe purposes of homework, types of assignments, methods of giving assignments, and evaluation of homework.
16. Plan a homework assignment for a selected mathematical topic.
17. Identify and discuss the content for each secondary mathematics course--advanced math, algebra II, geometry, algebra I, pre-algebra.
18. Demonstrate the use of the overhead projector in presenting a selected mathematical concept.
19. Construct a five to ten-minute test on a selected mathematical topic.
20. Prepare a full-period test on a mathematical topic.
21. Describe some instruments used to measure attitudes toward mathematics.
22. Describe methods of evaluating teaching performance.
23. Identify and describe methods of measuring student performance with conventional testing as only one of the methods.
24. Describe remediation strategies and plan a lesson for remediation on a selected mathematics topic.
25. Identify problem-solving strategies and describe techniques to be used in teaching problem solving.
26. Describe specific uses of technology in teaching mathematics in secondary school.
27. Explain NCTM’s position in regard to the use of technology.
28. Plan calculator and/or computer activities to be used in teaching a selected mathematical topic.
29. Develop or select enrichment activities for a chosen mathematics class.
30. Plan a mathematics program for a club or a school assembly.
31. Define mathematics anxiety and describe techniques to be used to alleviate anxiety in the classroom.
32. Plan and teach a 50-minute lesson designed to present a mathematical concept.
33. Plan teaching strategies that provide for individual learning differences.
34. Select teaching materials appropriate for specific situations, for students of differing abilities, for diversity and multiculturalism in the classroom, and for integration of knowledge from several subject areas.
35. Describe some effective classroom management techniques.
36. Prepare instructional bulletin boards.
37. Select materials to purchase for the classroom when a maximum amount is allocated for such expenditures.
38. Select, read, and summarize current articles on the topics listed in “subject matter topics” (see above).
39. Prepare a list of questions to be asked before accepting a teaching position.
40. Write your philosophy of teaching secondary school mathematics.
41. Discuss/explain the College of Education Conceptual Framework

**Major Student Activities**

1. Mastery of the content studied.
2. Completion of daily assignments.
3. Preparing a portfolio of plans for a 5 to 10-day instruction period.
4. Written* and/or oral reports on readings and assignments.
5. Planning and teaching lessons.
6. Participating in cooperative learning groups, practicing with manipulative materials and technology, and demonstrating the use of both in teaching mathematical concepts.
7. Attending all classes and actively participating in class discussions and activities.

*In addition to written reports on reading assignments, you will have written assignments that require you to provide written explanations of concepts. Evaluation of the answers to such questions will include mathematical content as well as spelling, grammar, and sentence construction. Any written projects, including your portfolio, will be graded for mathematical content and writing mechanics.

**Methods of Instruction**

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<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Presentations by students</td>
<td>30%</td>
</tr>
<tr>
<td>Lecture/demonstration</td>
<td>20%</td>
</tr>
<tr>
<td>Class discussion/activities</td>
<td>50%</td>
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</tbody>
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**Evaluation and Grading**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily assignments and class participation</td>
<td>30%</td>
</tr>
<tr>
<td>Portfolio</td>
<td>25%</td>
</tr>
<tr>
<td>Teaching a 50-minute lesson</td>
<td>25%</td>
</tr>
<tr>
<td>Final examination</td>
<td>20%</td>
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</tbody>
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Grading scale: A--94-100; B--84-93; C--74-83; F-- below 74.

**NOTE:** Failure to submit an acceptable portfolio results in failure of the course. Portfolio due: Nov. 20.
Final exam: Monday, Dec. 4: 6:00.

**Class Attendance**

Prompt and regular attendance is necessary for success in this course. Any student that exceeds 2 absences (that’s two weeks of classes) without verifiable excuses will receive a lowered participation grade. A student is allowed a maximum of 3 absences (that is 3 weeks of classes). Any person exceeding this number will receive a semester grade of “F.” Please be on time for each class meeting. If your class schedule is such that prompt and regular attendance cannot be accomplished, please arrange to take this course during a later semester.
Collateral Reading
Appropriate sections of secondary mathematics textbooks, portions of Principles and Standards for School Mathematics (NCTM, 2000), Mississippi Mathematics Framework 2000 (Mississippi Department of Education, 1999), and other books will be assigned throughout the semester. Appropriate articles from current periodicals such as the Mathematics Teacher will also be assigned. Refer to Subject Matter Content list above. Resources: Walters 255, 272, 276, 270D, IRC, Internet, Main Library.

College of Education Conceptual Framework

DELTA EDUCATION MODEL

Vision: The Delta State University College of Education promotes a vibrant educational community committed to preparing capable and confident teacher candidates who can positively affect learning outcomes of students in the P-12 school setting. Appropriately illustrated by the Delta triangle, the model reflects teacher candidate development through the triad of preparation, performance and professionalism, supported by the larger Delta educational community (faculty, educational partners, and alumni).

Guiding Principles:

1. **Education is a lifelong endeavor**, requiring an ever-expanding content knowledge base, a repertoire of skills, and a broad experience base. (GP1)
2. **Education is interactive and reflective**, a process that is accomplished through assessment and reflection of a collaborative nature. (GP2)
3. **Education is culturally contextualized**, requiring both an understanding and appreciation of the diversity of all individuals within the learning community. (GP3)
4. **Education is dynamic**, with change being driven by assessment data and the needs of all segments of the educational community. (GP4)
5. **Education is enhanced by technology**, infused throughout programs and services. (GP5)