

**MISSISSIPPI STATE UNIVERSITY
COLLEGE OF EDUCATION**

**DEPARTMENT of CURRICULUM, INSTRUCTION, and SPECIAL
EDUCATION
COURSE SYLLABUS**

Course Prefix and Number: EDS 6633

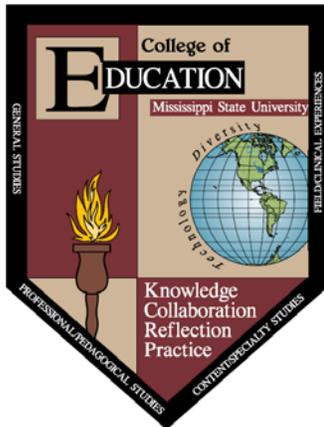
Course Title: Mathematics Education Pedagogy

Credit Hours: Three (3) semester hours

Type of Course: Lecture

Catalogue Description: (Co-requisite: EDS 8886 or EDS 8896 or consent of instructor.) Three hours lecture. Field-based. A comprehensive examination of the effective practices for teaching and evaluating mathematics students in the secondary setting.

College of Education Conceptual Framework:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based

strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

Course Objectives:

The students will:

1. Examine the goals and objectives of the secondary mathematics program.
INTASC #1 & #7; CFPO 3
2. Prepare effective plans for units of work for a day, week, semester or year.
INTASC #1 & #7; CFPO 5 & 6
3. Explain the purposes of the three general types of activities in a teaching unit and specific materials and/or activities which can be used to accomplish these purposes. **INTASC #7; CFPO 5 & 6**
4. Explain the purposes of evaluation and methods of evaluating pupil progress, materials, activities, and self. **INTASC #1 & #7; CFPO 3 & 5**
5. Write a teaching unit in mathematics at any grade level, 7-12, for a specific known class. **INTASC #7; CFPO 5**
6. Identify curriculum problems and possible solutions to such problems.
INTASC #7; CFPO 3
7. Examine issues of math anxiety. **INTASC #5; CFPO 2 & 8**
8. Develop a written term project on how mathematics is used as a tool in other subject fields in the secondary school curriculum. **INTASC #1; CFPO 3**
9. State the purposes of co-curricular activities, specific activities pertaining to mathematics which may be included, and the teacher's role in such activities.
INTASC #6 & #7; CFPO 7
10. Discuss causes mathematics anxiety and how to reduce it in the secondary mathematics classroom. **INTASC #2; CFPO 2 & 8**
11. Know how to continue professional growth through
 - a. Active membership in professional organizations at local, state, regional, and national levels.
 - b. Keeping up to date with current research practices by reading professional journals.
 - c. Attending workshops, inservice programs, etc.
 - d. Further formal study through institutions of higher learning.
INTASC #1 & #10; CFPO 9 & 10
12. Plan and teach a mini-lesson at any grade level, 7-12. **INTASC #7; CFPO 10**

Topics to be Covered:

- Planning in the Secondary Classroom (9 hours)
 - Daily lesson Plans
 - Unit Plans
 - Yearly Plans
- Curriculum Issues (9 hours)
 - Making Math Relevant
 - Real World Connections

- Cross-curricular connections
- Integrating Technology (math-specific websites, graphing calculators, motion devices)
- Assessment (9 hours)
 - Classroom Assessment
 - High Stakes Testing
- Effective Teaching Strategies (9 hours)
 - Algebra 1
 - Geometry
 - Higher Level Math
 - Students with Special Needs
- Motivation & Mathematics (3 hours)
- Math Anxiety (3 hours)
- Professional Organizations & Development (3 hours)

Required Texts and Materials:

1. *Teaching Mathematics through Problem Solving* (2006). The National Council of Teachers of Mathematics.
2. *Principles to Action* (2014). The National Council of Teachers of Mathematics.
3. Common Core State Standards for Mathematics: Available at <http://www.corestandards.org/Math>

Methods of Instruction:

Methods of instruction will include lecture, discussion, demonstrations, presentations, hands-on-activities, and projects. All students are responsible for material assigned. They will work together and individually to accomplish assigned tasks.

Student Assignments and Activities:

1. Article Reviews (20%)
2. Problem Sets (10%)
3. Guided Field Experience Reflections (15%)
4. Reading Discussions (10%)
5. History of Mathematics Education Project (20%)
6. Unit Plan (25%)

Academic Honesty/ Honor Code:

In the event of an occurrence of academic misconduct, the guidelines and procedures outlined in the Academic Misconduct Policy will be followed. The guidelines and procedures may be accessed on the web at <http://honorcode.msstate.edu>

Technology:

Technology will be used in both the delivery of the course content and through course requirements completed by graduate students. Delivery of course content may use PowerPoint presentations, materials on the Internet and myCourses. All course assignments will be completed using appropriate software.

Cultural Diversity:

Student will examine materials for appropriateness to use with diverse learners.

Students with Disabilities:

In accordance with section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act, Mississippi State University reasonably accommodates students who demonstrate, through appropriate documentation, a qualified disability. The department of Student Support Services (SSS) is the designated unit on campus where students with disabilities identify themselves when requesting academic accommodations. For additional information, contact SSS at 325-3335.

Field Component:

A field component of observation hours in a local public school is required.

Evaluation of Student Progress:

The points needed for each letter grade are detailed below. As this is a graduate level course, earning an “A” will take extra effort on the part of the student. A “B” represents quality, acceptable work. All assignments must be submitted on MyCourses. Work submitted via email will not be accepted. Late work submitted within one week of the due date will be accepted with a penalty of 10% per calendar date late. Each of the required assignments and activities must be completed in order to pass the course. Students who fail to complete each of the six required items will receive an “F” in the course.

Grading:

Scale

90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
Below 60	F

References

- Ball, L. & Stacey, K. *Teaching Strategies for Developing Judicious Technology Use. Technology-Supported Mathematics Learning Environments.* NCTM: Reston, VA.
- Bransford, J. (2000). *How people learn: Brain, mind, experience, and school.* Washington, DC: National Academy Press.
- Brown, C.A. & Smith, M.S. (1997). *Supporting the development of mathematical pedagogy.* The Mathematics Teacher 90(2).
- Doerr, H.M., Meeham, D.J., & O’Neil, A.H. *A natural approach to the number e.* The Mathematics Teacher 105(6).

- Hodges, T., & Conner, E. (2011). *Reflections on a technology-rich mathematics classroom*. *The Mathematics Teacher* 104(6).
- Mahoney, J.F. (2004). *How many votes are needed to be elected president?* *The Mathematics Teacher* 98(3).
- National Research Council. (2001). *Adding it up: Helping children learn mathematics*. J.Kilpatrick, J. Swafford, and B.Findell (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.
- Reinhart, S.A. (2008). *Never say anything a kid can say*. *Mathematics Teaching in the Middle School* 5(8).
- Stigler, J.W. & Hiebert, J. (1999). *The teaching gap: Best ideas from the world's teachers for improving education in the classroom*. New York: Free Press.