

MISSOURI WESTERN STATE UNIVERSITY

COLLEGE OF LIBERAL ARTS AND SCIENCES

DEPARTMENT OF COMPUTER SCIENCE, MATEMATICS, AND PHYSICS

COURSE NUMBER: MAT 465

COURSE NAME: Mathematics Teaching: Methods and Materials

COURSE DESCRIPTION:

Techniques, materials, and resources used in the mathematics curriculum in secondary schools.

PREREQUISITE:

Grade of C or better in both MAT 206 Mathematical Transitions and EDU 203 Participation in Teaching I

TEXTBOOK

5 Practices f/Orchestrating Product, Smith, Edition 11, NCTM,
ISBN 9780873536776

Mathematical Mindsets, Boaler, Edition 16, Wiley, ISBN 9780470894521

TECHNOLOGY:

Instruction on the use of the following technologies in the teaching of secondary school mathematics will be provided, as needed:

- graphing calculators having at least the capacity of the TI-83
- MathType
- PowerPoint and Word
- GeoGebra

COURSE OBJECTIVES:

In an effort to provide the prospective secondary mathematics teacher with the knowledge, skills, and dispositions necessary to be a successful mathematics educator, this course will offer prospective mathematics teachers opportunities to communicate mathematics clearly and accurately, examine mathematics in relation to various pedagogical techniques, and engage in all aspects of the teaching profession. Specifically, prospective secondary mathematics teachers will...

1. deepen their own understanding of mathematics by re-examining the mathematics they have learned, tracing its development from an elementary school perspective to the college-level, and considering the interconnectedness of mathematical ideas.
(MWSU Teacher Education Standards #1, 2, 9, 12; NCTM NCATE Standards #1 – 4, 6)
2. explore and experiment with alternative, research-based, mathematical strategies to be considered when teaching and assessing students having diverse learning styles.
(MWSU Teacher Education Standards #2 – 6, 8, 11, 12; NCTM NCATE Standards #2 – 6)
3. design and present lessons that reflect the spirit of the *Standards for Mathematical Practice* in the *Common Core State Standards – Mathematics* and the *NCTM Standards*, incorporating a variety of teaching strategies for differentiating instruction, and using appropriate technology/manipulatives.
(MWSU Teacher Education Standards #1 – 12; MoStep Mathematics Competencies 1.2, 1.8, 1.11, 1.12; NCTM NCATE Standards #1 – 6)
4. design assessment activities to be used as formative/summative evaluations of students' mathematical knowledge, create scoring guides (when appropriate), implement scoring guides in the evaluation of authentic student responses, identify student misconceptions, and incorporate appropriate mathematical strategies to correct noted misconceptions.
(MWSU Teacher Education Standards #1 – 8; MoStep Mathematics Competencies 1.2; NCTM NCATE Standards #3 – 5)
5. observe and critique oral and written mathematical discourse presented by their peers.
(MWSU Teacher Education Standards #7 – 10; NCTM NCATE Standard #2, 6)
6. engage in personal reflection upon completion of course assignments and during in-class activities/discussions, focusing on how they intend to apply what has been learned in their future classroom.
(MWSU Teacher Education Standards #9; NCTM NCATE Standard #2, 6)