

GENERAL INFORMATION	
Course Prefix/Number: MAE4940	Course Title: <b>Advanced Topics in Mathematics Education Practicum</b>
Number of Credits: 3 credits	
Degree Type	<input type="checkbox"/> B.A. <input type="checkbox"/> B.S. <input type="checkbox"/> B.A.S. <input checked="" type="checkbox"/> A.A. <input type="checkbox"/> A.S. <input type="checkbox"/> A.A.S. <input type="checkbox"/> C.C.C. <input type="checkbox"/> A.T.C. <input type="checkbox"/> V.C.C.
Date Submitted/Revised: 2/29/12	Effective Year/Term: 2012-1
<input type="checkbox"/> New Course Competency <input checked="" type="checkbox"/> Revised Course Competency	
Course Description (limit to 50 words or less): The student will learn to conduct classroom research. The student will use action research strategies to identify and address issues related to mathematics learning and implement research-based instructional practices that address diverse needs of students' in grades 6-12. Forty hours of clinical experience are required. Special fee. ( 3 hr. lecture )	
Prerequisite(s): MAE4360	Corequisite(s):

**Competencies:**
**Competency 1:**

The student will evaluate the significance of educational research to the teaching and learning of mathematics by:

1. Identifying current educational research pertaining to instructional strategies for mathematics.
2. Summarizing and critiquing a minimum of 5 articles from a refereed mathematics education journal.
3. Identifying the parts of a refereed journal article and stating the purpose, methodology, result, and conclusion.
4. Utilizing the library and electronic databases to find specific information about current mathematics educational research in refereed journals.
5. Applying research-based instructional practices for developing students' critical thinking and conceptual understanding of mathematical concepts.
6. Developing a repertoire of teaching practices that are congruent with current mathematics educational research and personal teaching philosophies.

**Competency 2:**

The student will design and manage mathematics learning environments which are responsive to the needs and abilities of all students by:

1. Exploring the current literature/research related to mathematics education and design activities that will enable all students to improve their conceptual understanding of mathematical concepts.
2. Constructing and implementing methods of assessment (formative and summative) for a mathematics unit plan with daily lesson plans.

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3. Analyzing the needs of students as demonstrated through their classroom behavior and performance on pre and post data assessment tools
4. Selecting teaching and assessment strategies that support the development of student understanding.
5. Designing appropriate learning activities that address the current literature/research related to mathematics education and design activities that will enable all students to improve their conceptual understanding of mathematics concepts.
6. Developing and/or selecting and using instructional content, materials, resources, and strategies that respond to cultural, linguistic, communication, disability, and gender differences and are aligned to the State and National Standards.
7. Designing, sequencing, and implementing appropriate lesson plans and instructional units that incorporate problem solving to carry out the goals and objectives of the State and National Standards.
8. Delivering and designing engaging and challenging lessons/instruction for students to achieve mastery.
9. Developing learning experiences that require students to demonstrate a variety of applicable skills and competencies.
10. Identifying gaps in students' subject matter knowledge.
11. Modifying instruction to respond to preconceptions or misconceptions.
12. Supporting, encouraging, and providing immediate and specific feedback to students to promote student achievement.

**Competency 3:**

The student will effectively communicate with parents, students, community partners, and school-based colleagues by:

1. Communicating and sharing research findings accurately and effectively orally and in writing.
2. Observing and identifying techniques for leading effective classroom discourse.
3. Providing students with clear and specific instructions for completing lesson activities, especially in the laboratory.
4. Orchestrating discourse among all students about scientific ideas and processes.
5. Facilitating ongoing formal and informal discussion based on a shared understanding of rules of discourse.
6. Utilizing verbal, nonverbal, and written language effectively.
7. Interacting with colleagues, supervisors, and students to develop effective lesson plans.
8. Interacting effectively with colleagues, parents, and students, mentoring new colleagues, and fostering positive relationships with the community.
9. Integrating information and feedback from students, faculty supervisors, cooperating teachers, and others to improve their teaching and student learning.
10. Creating an educational climate that foster openness, inquiry and concern for others.
11. Collaborating with the home, school and larger communities to foster communication and to support student learning and continuous improvement.
12. Sharing the importance and outcomes of student assessment data with the student and the student's parent/caregiver(s).

**Competency 4:**

The student will assess the learning of their students to guide their teaching by:

1. Selecting appropriate formative assessments to monitor learning.
2. Designing and aligning formative and summative assessments that match learning objectives and lead to

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mastery.

3. Utilizing a variety of assessment tools to monitor student progress, achievement and learning gains.
4. Utilizing student feedback to monitor instructional needs and to adjust instruction.
5. Modifying assessments and testing conditions to accommodate learning styles and varying levels of knowledge.
6. Utilizing a variety of data, independently and in collaboration with colleagues, to evaluate student learning outcomes, adjust planning and continuously improve the effectiveness of lessons.
7. Utilizing student data, observations of teaching, and interactions with colleagues to report student achievement and opportunities to learn to students, teachers, parents, policy makers, and the general public.
8. Utilizing multiple methods to systematically gather data about student understanding and ability.
9. Applying technology to organize and integrate assessment information.
10. Examining and utilizing data-informed research to improve instruction and student achievement
11. Utilizing multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students.
12. Analyzing assessment data and using the results of these multiple assessments to guide and modify instruction, the classroom environment, or the assessment process.
13. Analyzing and applying data from multiple assessments and measures to diagnose students' learning needs, informing instruction based on those needs, and drive the learning process.
14. Utilizing the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work.
15. Reflecting constantly upon their teaching and identifying ways and means through which they may grow professionally.

**Competency 5:**

The student will reflect on the importance of continuous personal and professional growth and change to meet the needs of their student, school community, and profession by:

1. Exploring the theoretical and practical literature related to effective learning environments and design and establishing a classroom environment that is conducive to the high achievement of all students.
2. Conducting an action research project at their field experience site in order to identify aspects of the educational process in that they wish to enhance.
3. Implementing an action research project to develop skills for implementing the education change.
4. Utilizing student data, observations of teaching, and interactions with colleagues to reflect on and improve teaching practice.
5. Using the results of multiple assessments and data (both qualitative and quantitative) as part of their action research project to guide and modify instruction to shape learning experiences for students, keeping in mind both cultural and political influences.
6. Utilizing information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth.
7. Engaging in self-reflection regarding research-based performance and pursuing opportunities for feedback to demonstrate commitment to continuous improvement in effective goal-setting through a professional development plan.
8. Engaging in targeted mathematics education professional development growth opportunities sponsored by National, State, and/or Local professional organizations and reflective practices.

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9. Participating in mathematics teaching professional organizations and conferences.
10. Implementing knowledge and skills learned in professional development in the teaching and learning process
11. Designing purposeful professional goals to strengthen the effectiveness of mathematics instruction based on students' needs.

**Competency 6:**

The student will understand that educators are held to a high moral standard in a community by:

1. 1. Adhering to the Code of Ethics and the Principles of Professional Conduct of the Education Profession of Florida, pursuant to State Board of Education Rules 6B-1.001 and 6B-1.006, F.A.C, and fulfilling the expected obligations to students, the public and the education profession.