MATH 390: Techniques in Teaching Secondary Level Mathematics
Syllabus: Section 1 Fall 2018

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Office Hours: WF 9-9:30am; MWF 1-1:30pm; MTW 4-4:30pm
Thursdays 4-5pm; 8:15-9:15pm

Class Time: Thursdays 5:30pm-8:00pm (JAC Q24)
Monday-Friday: By appointment

Appointments can be made via the following link:
https://www.supersaas.com/schedule/Gillentine_Appointments/Fall_2018_Schedule

Course Description: Teaching techniques for geometry presented and discussed. For Math Education Majors or Minors (or Graduate) only.

Course Outcomes: Students will develop competence with respect to the five process standards found in Principles and Standards for School Mathematics published by the National Council of Teachers of Mathematics in 2000:

1. Problem solving – students will become more confident and independent problem solvers.
2. Reasoning and proof – the student’s ability to use deductive, inductive, and intuitive reasoning will grow, and he/she will be able to explain his/her solution process.
3. Communication – students will appreciate the role of discussion in learning mathematics and the value of notation and vocabulary as precise tools that make communication easier.
4. Connections – students will become more aware of connections between various mathematical topics and of connection between mathematics and many other application areas.
5. Representation – the student will increase his/her ability to create and use mathematical representations to model and interpret mathematical ideas and concepts.

In addition, students will have the opportunity to engage in the Standards for Mathematical Practice as outlined in the Common Core State Standards for Mathematics:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Students will observe and study not only the mathematical content for which they will be teaching but also understand the mathematics on a deeper level in order to be able to examine topics from many different perspectives and appreciate multiple strategies.

See Learning Objectives for a detailed list of objectives that each student is expected to master by the end of the semester.

Purpose: The purposes of this course are to model, engage, and discuss appropriate strategies for teaching secondary mathematics; to review and extend candidates’ knowledge of selected mathematics topics; to assist
candidates in compiling a file of teaching resources; and to build candidates’ knowledge, skills, and dispositions in teaching secondary mathematics. After completing the course, candidates should be able to

- Know, understand, and apply the process of mathematical problem solving. [NCTM 1.1, 1.2, 1.3, 1.4]
- Reason, construct, and evaluate mathematical arguments and develop an appreciation for mathematical rigor and inquiry. [NCTM 2.1, 2.2, 2.3, 2.4]
- Communicate their mathematical thinking orally and in writing to peers, faculty, and others. [NCTM 3.1, 3.2, 3.3, 3.4]
- Recognize, use, and make connections between and among mathematical ideas and in contexts outside mathematics to build mathematical understanding. [NCTM 4.1, 4.2, 4.3]
- Use varied representations of mathematical ideas to support and deepen students’ mathematical understanding. [NCTM 5.1, 5.2, 5.3]
- Embrace technology as an essential tool for teaching and learning mathematics. [NCTM 6.1]
- Use spatial visualization and geometric modeling to explore and analyze geometric shapes, structures, and their properties. [NCTM 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8]
- Demonstrate an understanding of concepts and practices related to data analysis, statistics, and probability. [NCTM 14.1, 14.4, 14.5, 14.6]
- Apply and use measurement concepts and tools. [NCTM 15.1, 15.2, 15.3, 15.4]
- Select, use, and determine suitability of the available mathematics curricula and teaching materials for diverse groups of students. [NCTM 8.1; INTASC 1, 2, 3]

**Required Textbook and Materials:**

- Modeling software – Geogebra OR Desmos

**Additional, Suggested Reading Materials:**

Supplies:
• 3 Ring Binder with section dividers (recommended)
• Course Packet (will be available via Blackboard) – Pages will be needed in class during discussions. You must bring a printed copy with you to class at all times. [See calendar/instructor emails for page #.]
• A pack of loose leaf notebook paper (recommended)
• An electronic device (cell phone, tablet, or computer) – Some discussions will take place via Google Docs or the Modeling software. If you do not have access to an electronic device, then inform the instructor within the first two weeks of class. A device will be provided to you.

Instructional Methods:
There will be almost no lectures in this course. To help the students develop their intuitive reasoning and problem-solving skills, most of class time will be spent working in small groups on problems and tasks. An important part of learning to solve problems is being willing to struggle with a problem even after getting stuck.

Discussions of the problems will be done in a large group setting after most groups have finished. Sometimes students will be asked to write up their ideas and solutions, but they are ALWAYS expected to think about the problems, participate in solving them, and communicate their ideas with others. Communicating ideas clearly to others is as important as developing them in the first place.

Please note that this is a mathematics content course, not a pedagogy (methods) course. However, correct pedagogy techniques will be used in order to set an example. As an education major, students will participate in a mathematics methods course during their senior block in which they will be taught more about the methods they will witness in this class. After students finish this course they will feel much more confident and comfortable about teaching mathematics and about being a mathematical authority in their classroom.

Grading:

<table>
<thead>
<tr>
<th>Percent of overall grade</th>
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</tr>
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<tbody>
<tr>
<td>4 Assessments and Comprehensive Final Exam</td>
<td>80%</td>
</tr>
<tr>
<td>Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>5%</td>
</tr>
</tbody>
</table>

Rubrics, checklists, and self-evaluation will be used to determine candidate achievement of the course objectives. All required assignments will be given a specific grade.

Final grades for the course will be assigned using the following system:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90%-100%</td>
</tr>
<tr>
<td>B+</td>
<td>87%-89%</td>
</tr>
<tr>
<td>B</td>
<td>80%-86%</td>
</tr>
<tr>
<td>C+</td>
<td>77%-79%</td>
</tr>
<tr>
<td>C</td>
<td>70%-76%</td>
</tr>
<tr>
<td>D</td>
<td>60%-69%</td>
</tr>
<tr>
<td>F</td>
<td>Below 60%</td>
</tr>
</tbody>
</table>

Assignments:
All assignments are due by the beginning of class. Assignments should be uploaded and submitted before class. Paper copies of assignments should also be turned in at the class meeting. If assignments are not submitted by the beginning of class on the assigned due date or a paper copy of the assignment is not provided, a penalty of 20% will be deducted. An additional 20% will be deducted for every day that the assignment is late. No late
assignment will be accepted after the beginning of the following class meeting. Assignments will be available on Blackboard. Problem Sets with class notes should be turned in at the end of class on the date due.

See Assignments and Class Participation Packet and Unit Calendars for details on assignments and due dates.

Attendance & Tardy Policy: Each candidate is responsible for his/her work. Class discussions are a very important part of this class. It is important to be present if at all possible. Candidates are allowed 1 absence. Five points are deducted from participation points for EACH absence above the limit. It is the candidate’s responsibility to make sure his/her attendance record is correct. It is the candidates’ responsibility to notify the professor if they arrived to class late. 1 point will be deducted from participation for each tardy.

Attendance will be verified within the first two weeks of class. Note that students who do not attend class within the first two weeks of the semester may be dropped from the roll.

Make up work:
1. Assessments should not be missed. However, if you must miss an assessment due to extreme illness or death in the immediate family, the instructor must be notified as soon as possible. Official documentation must be provided within one week of the assessment. A make-up assessment may be scheduled at the instructor’s discretion.
2. Any candidate who will miss an assessment because of an official University function must reschedule and take this assessment at a time BEFORE the assessment is scheduled to be given. Official University documentation must be provided. NO OTHER rescheduling will be allowed.
3. An "I" grade will not be given without the permission of the Department of Mathematics.
4. Any candidate having three or more final examinations scheduled for the same day will arrange with the instructor to take the noon examination on some other mutually satisfactory date. Please note that only the noon examination may be rescheduled for this reason.
5. No other examinations are to be given at any time other than scheduled hours, either for an individual or for a class, unless the instructor concerned has specific approval from the academic dean.
6. Every candidate must take the final exam at the time scheduled. The only exceptions are those candidates affected by # 2 or # 4 above.

Flexibility Clause – The requirements, assignments, policies, evaluation procedures, etc., are subject to change. Students’ experiences and needs, as well as emerging knowledge, will be considered in modifying this course syllabus.

University Policies:
Academic Dishonesty/Cheating: The following statement is the policy of the Department of Mathematics in MATH 390 regarding cheating:
Offenses: Cheating on any exam or assignment, theft or attempted theft of exam questions, possession of exam questions prior to the time for examination, or the use of materials not deemed “legal” by the professor on tests or assignments shall all be offenses subject to appropriate penalties.
Penalties: The penalty for commission of any offense set out above is failure in the course and, subject to the approval of the Chancellor, dismissal or suspension from the University.
Plagiarism: Plagiarism is a serious offense and is treated as such. Students caught plagiarizing on ANY assignment will receive a zero for the assignment (first offense) and will be dismissed from the course with a recorded grade of F (second offense). No exceptions!
WITHDRAWAL DEADLINE FOR FALL 2018 SEMESTER: Monday, October 1. After the Course Withdrawal Deadline, courses dropped will be recorded on University records and the W grade will be recorded if the student is not failing the course at the time of withdrawal; otherwise the grade recorded will be F. After the course withdrawal deadline, a student may drop a course only in cases of extreme and unavoidable emergency as determined by the academic dean; dropping a course after the deadline will not be permitted because of dissatisfaction over an expected grade or because the student is changing his/her major.

Disability Access and Inclusion: The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal at https://sds.olemiss.edu to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at 662-915-7128 so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students.

Special Dates:
Classes begin: Monday, August 20
Labor Day: Monday, September 3
Thanksgiving: Monday, November 19 – Friday, November 23
Classes end: Friday, November 30
Final Exam: Thursday, December 6, 7:30 P.M.