

Lamar University

Department of Mathematics, College of Arts & Sciences

MATH 4321-01 Topics in Secondary Mathematics (3 hour course)

Fall 2017 -- Syllabus

Monday/Wednesday, 1:50 – 3:10, Family and Consumer Science Building, Room 112

Instructor:	MaryE Wilkinson
Office:	Library 624
Phone:	409-880-8376
Office Hours:	Monday/Tuesday/Thursday 10:00 – 11:00 Other times available by appointment
Text:	There is no text or course packet, readings are found in the LU Library
Software:	Geometer's Sketchpad (available in Lucas 209)
Prerequisites:	Successful completion of mathematics course requirements for Texas educator certification, acceptance into the Teacher Education Program, or emergency certification to teach secondary mathematics.

Course Description: Introduction to essential topics for pre-service 4-12 mathematics educators.

Topics include quantitative reasoning, algebraic thinking, geometry, spatial reasoning, measurement, precalculus, mathematics models, and AP Calculus and Statistics. Offered: Fall

This capstone course is for preprofessional mathematics educators seeking secondary certification in mathematics. It is designed to develop students' mathematical power through problems posed with manipulatives or from other concrete contexts (drawing undergraduate level mathematics out of 4-12th grade mathematics activities), problems in mathematical modeling (tying together areas of undergraduate mathematics through applications), and reflective writing on 4-12th grade curricular materials or content areas (viewing 4-12th grade mathematics curriculum from an advanced viewpoint). The goals of the course are to enable students to build connections among the mathematical areas they have studied and between undergraduate mathematics and school mathematics, to develop their understandings of mathematics as an integrated discipline, and to strengthen their oral and written communication skills in mathematics. The Texas Essential Knowledge and Skills (TEKS) and the Texas College and Career Readiness Standards (CCRS) provide context for the course content.

STANDARDS FOR PREPROFESSIONAL TEACHERS: This course represents a shift of emphasis, from the Texas State Board of Educator Certification (SBEC) to the Texas Essential Knowledge and Skills (TEKS). NOTE: Students are required to download and save or print Texas Administrative Code (TAC), Title 19, Part II Chapter 111. Texas Essential Knowledge and Skills for Mathematics. Other relevant documents will be downloaded during the term.

MATH 4321 Learning Outcomes: Upon completion of this course, students will:

1. Demonstrate knowledge of the mathematical concepts that a secondary teacher will be expected to present and assess;
2. Demonstrate proficiency in explaining and demonstrating mathematics concepts, answering questions about mathematics concepts, and assessing acceptable achievement in mathematics;
3. Describe and discuss local, statewide, and national secondary school mathematics curricula;
4. Demonstrate proficiency in secondary school mathematics including the nature of problem solving, the problem-solving process, and problem-solving strategies; mathematical concepts, procedures,

- and connections by beginning on the concrete level and moving through all levels of abstraction; quantitative reasoning; algebraic thinking; geometry, spatial reasoning, and measurement; precalculus; mathematical models with applications; AP Calculus AB and BC; in AP Statistics;
5. Prepare and teach mathematics concepts and procedures to peer groups using specific techniques and motivational ideas; materials that are appropriate for teaching specific mathematics topics; and support to peers who need additional instruction;
 6. Exhibit positive, self-reflective, and professional attitudes toward the life-long process of teaching and learning mathematics;
 7. Use technology and manipulatives in pursuing mathematical investigations.

NOTE: This is a course in the mathematics that a secondary teacher will be expected to present and assess. While it addresses pedagogical content knowledge, it is essentially a university mathematics course and does not represent elementary or secondary school curricula. This is not a methods course, however, the delivery format will include concrete, semi-concrete, semi-abstract, and abstract concepts and activities.

Lectures/Discussions/Classwork/Homework Topics: Please see the learning outcomes listed above and the course calendar for the topics that will be discussed in this course. You will experience lectures, conversational lectures, hands on activities, and peer presentations during the semester. Guidelines for all assignments, a calendar of due dates, and the course reading list will be posted in the Content Folder on the course Blackboard site.

Assessment and Evaluation:

1. Class Participation, Discussion, and Attendance

This is a highly participatory course, involving lectures, professional readings, class discussions, hands-on activities, group activities, presentations, and formal papers. Students are expected to be consistent and high quality contributors to class activities, discussions, and projects. While no points have been allotted, the final average may be significantly reduced if the student does not maintain high standards in participation and attendance (three absences will be allowed without deduction).

2. Nonstandard Problems (NSP) (15%)

At least eight nonstandard problems will be assigned. Each student is expected to work alone to provide complete solutions and written explanations for the problems. Students may discuss the problems only after the independent work completed. (Hand written solutions and explanations will be accepted.

3. Geometer's Sketchpad® Assignment (15%)

Instructions will be provided for several constructions that will be completed using the software program, *Geometer's Sketchpad*®. LU holds a site license for this software and it is available on several computers on campus. A one-year license is available for \$10.56. Go to <http://www.mheducation.com/prek-12/program/MKTSP-HGA01M0.related.html?page=3&sortBy=relevance&order=desc&bu=seg>

NOTE: The license will expire in one year.

4. Journal Entries (15%)

Regular writing prompts will be provided, usually with respect to an article or a sample of school mathematics curriculum. An example of a journal prompt is: *"What principles from abstract algebra (groups, rings, and fields) are reflected in the section on transformational geometry from this curriculum? Support your response with examples and analyze them completely."* Your response should reflect both the understanding you have of the mathematical context in which I ask you to write and the areas of continued study or experience that are required for you to deepen your understanding. All journal entries must be typed and will be graded on form (organization, grammar, spelling, punctuation) as well as content.

5. Individual Presentation of Mathematical Content (20%)

Each student will present a secondary mathematics concept and facilitate a discussion about content covered in a block of the TEKS. Student presentations will be in the form of problem solving mathematics lessons.

6. Two Content Exams (25%)

7. Final Portfolio (10%)

A portfolio is a collection of your work which includes documents that detail your accomplishments in a given area. In this course you will compile a portfolio of your mathematical work, together with your assessments of that work and your reflections on yourself as a doer and communicator of mathematics. The items required for your portfolio will be described, though you may include additional work that you feel is worthwhile. NOTE: A portfolio does not include everything that you do in the field; instead, it should showcase your strengths and detail your growth over time.

Letter grade equivalence: 90%-100% A, 80%-89% B, 70%-79% C, below 70% F

Final Exam: The portfolio is the final assessment, Scheduled Exam Period - December 6, 2017, 11:00-1:30

General Information and Cautions:

1. Please come see me during my office hours, call me, or email me if you have any questions, comments, or complaints regarding any aspects of this course.
2. You will have an opportunity to evaluate all aspects of this course in a formal process to be completed online near the end of the term. You will receive an email reminder through your LU account.
3. There are no “optional” assignments for this course. All assignments are required. A single grade of 0 will result in a course grade of F.
4. Punctuality and tenacity are important teacher characteristics. You are expected to be on time for each class meeting and to stay for the entire class period. If you miss more than one-half of a class, it will be counted as an absence. Late work, if submitted within seven days of the due date, may earn a maximum of 80% of the available points. If you must hand in your work when I am not available, ask a member of the staff in the Mathematics Department office [Lucas 200] to mark it for date/time and place it in my mailbox.

Lamar University expressly prohibits intimidation and harassment of students, faculty, staff, or applicants. <http://students.lamar.edu/academic-support/code-of-conduct.html>

Drop Policy: Please make note of the three dates indicated in this drop policy. Any drop will be your responsibility; I will not drop a student from the course.

September 13, 2017: (Census Date-Six Drop Rule does not apply) A student may drop or withdraw without consulting with the instructor. The Six Drop Rule does not apply to a drop before 5:00 PM.

September 29, 2017: (Six Drop Rule applies) A student may drop or withdraw from the course without academic penalty and receive a Q, however, the Six Drop Rule applies. The student will consult with the instructor and the Records Office to initiate a drop.

November 3, 2017: (Six Drop Rule applies) Last day to drop or withdraw with academic penalty; the student must be passing the course at the time of the requested drop in order to receive a Q. The drop form, including all required signatures, must arrive in the Records Office by no later than 4:00 PM. No drop is allowed after this date except in extreme extenuating circumstances. Any “late drop” must be approved by the instructor, department chair, college dean, and provost.

Academic Integrity: Students are expected to maintain complete honesty and integrity in their academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Students are specifically warned against all forms of cheating and plagiarism. The *Lamar University Student Handbook* clearly reads: “Any student found guilty of academic dishonesty in any phase of academic work will be subjected to disciplinary action. Punishable offenses include, but are not limited to, cheating on an examination or academic work which is to be submitted, plagiarism, collusion, and the abuse of source materials.” One aspect of the *Handbook’s* definition of cheating includes “purchasing or otherwise acquiring and submitting as one’s own work any research paper or other writing assignment prepared by an individual or firm.” Plagiarism is defined as “the appropriation and the unacknowledged incorporation of another’s work or ideas into one’s own and submitted for credit.” Faculty members in the College of arts and Sciences investigate all cases of

suspected plagiarism. Any student who is found cheating in this course will receive a course grade of F.

<http://students.lamar.edu/student-handbook.html>

Accommodations through the Disability Resource Center: Lamar University is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is located in the Communications building room 105. Office staff collaborate with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact the DRC at [409-880-8347](tel:409-880-8347) or drc@lamar.edu to arrange a confidential appointment with the Director of the DRC to explore possible options regarding equitable access and reasonable accommodations. If you are registered with DRC and have a current letter requesting reasonable accommodations, we encourage you to contact your instructor early in the semester to review how the accommodations will be applied in the course.

<http://www.lamar.edu/disability-resource-center/>

Incomplete Grades: The grade of "I" may be given when any requirement of the course, including the final examination, is not completed. Arrangements to complete deficiencies in a course should be made with the instructor prior to the end of the semester or term. Incomplete work must be finished during the next long semester or the Records Office will change the "I" to the grade of "F." While the extension may be granted by the instructor with the approval of his/her Department Chair and Academic Dean, once the "I" is changed to an "F" it cannot be changed back to an "I." In this case, either a "change of grade" procedure must be initiated or the course must then be repeated if credit is desired. The instructor may record the grade of "F" for a student who is absent from the final examinations and is not passing the course. Any request for an "I" must be in writing and include a plan for completion.

Campus Closure: In the event of an announced campus closure in excess of four days due to a hurricane or other disaster, students are expected to login to Lamar University's website's homepage for instructions about continuing courses remotely. <http://lamar.edu>

Emergency Procedures: Many types of emergencies can occur on campus; instructions for severe weather or violence/active shooter, fire, or chemical release can be found at:

<http://www.lamar.edu/about-lu/administration/risk-management/index.html>

Following are procedures for the first two:

Severe Weather:

- Follow the directions of the instructor or emergency personnel.
- Seek shelter in an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building.
- Stay in the center of the room, away from exterior walls, windows, and doors.

Violence/Active Shooter:

- **CALL** - 8-3-1-1 from a campus phone (880-8311 from a cell phone). Note: Calling 9-1-1 from either a campus phone or cell phone will contact Beaumont City Police Dispatch rather than University Police.
- **AVOID**- If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.
- **DENY**- Barricade the door with desks, chairs, bookcases or any other items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it is safe.
- **DEFEND**- Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.

While I have made a sincere effort to ensure that this syllabus is correct, changes may be required. I will announce any substantive changes during a regularly scheduled class. If you find an error or omission, please advise me at once so that the other members of the class may be advised.