Math 460: Mathematics for Secondary Teachers

Fall 2025   3 credits   Instructor: Dr. Dibbs

Instructor: Rebecca Dibbs, PhD
Office Location: 110 Education North
Office Hours: M 2-4 pm, WF 2-3 pm (zoom or ftf); or by appointment
University Email Address: Rebecca.Dibbs@etamu.edu

Texts: There will be no textbook for this class, but there is a coursepack for the handouts. Weekly readings will be made available to the class via Dropbox.

Course Materials: You will want a folder to save any physical copies of work and handouts. You should also save electronic copies of everything you do in class, since there is a reflective portfolio at the end of this class.

Course Description: Exploration of problems in algebra, trigonometry, analytic geometry, calculus, Euclidean geometry, probability, statistics and discrete mathematics using technology. The course is intended as a capstone study for prospective secondary teachers of mathematics. Graphing calculators and computers will be employed to illustrate and encourage conjecturing and problem solving with an emphasis on applications. In addition, a brief survey will be made of major documents and resources pertinent to secondary mathematics teachers, such as the NCTM Standards. Prerequisite: Math 2414 or consent of instructor.

Learning Outcomes: Students will learn pedagogical techniques for selected secondary mathematics topics. Students will learn research and writing techniques in capstone project in preparation for graduate school. Students will reflect on their practices and current research in the field. Students will complete the practice certification exam.

Grades: Your final grade will be computed using the following weights:

Assignment	Weight
Labs	20%
Action Research Project or Proposal	48%
Practice Test (5% taken, 10% passed)	10%
Portfolio	4%
Summary & Response	18%

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A: 90-100%   F: 0-59%

B: 80-89%   Note: your grade will be rounded to the nearest whole percent before grades are assigned

C: 70-79%

D: 60-69%

Labs: Over the course of the semester, I will be assigning a series of problems for you to write about. All of these problems will go through a process of revision: I will make comments on them, and then you will have an opportunity to revise them. You should explore each question and write out your thinking in a way that can be shared with others. Focus on your own ideas and understandings, and turn in whatever your thinking is on a question, even if only to say, "I do not understand such and such" or "I am stuck here." Be as specific as possible. Conjecture. Use pictures. Respond to my comments and questions.

Action Research Project/Proposal: As part of your continued professional development as a teacher, you will find areas of your practice that you will wish to experiment with- this process is called action research. In this class you will develop an Action Research topic of interested in. If you do not wish to/are not able to carry out an intervention this semester, you may write a proposal for an Action Research Project. There are two reasons why we are doing this project: (1) Action Research is the most effective way to implement new professional development ideas in the classroom (even if you don't formally write a paper while teaching and (2) when you begin your Master's degree, you will almost certainly have to write a thesis. The two most common forms for an education thesis are Action Research or the type of literature found in the alternative project. Ideally, this project can serve as a jumping off point for your future thesis.

Practice Certification Test: You need to get at least a 60% on the practice exam by the end of the semester to receive full credit. From prior experience, a 60% on the practice exam is generally a sign that you are ready to take the certification exam. If you have already taken the practice or (even better) the certification exam, show me documentation to receive full credit.

To schedule a date-

1. Go to the [Representative Exam Registration Process 2024-2025 Document](#).

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2. Review the testing dates (the schedule is separated by semester and is located under "Document Tabs" on the left side of the screen).
3. Email Alleigh.Phillips@etamu.edu by the registration deadline to request a seat.

Portfolio: At the end of the semester, I will ask you to turn in your portfolio containing all the work that you have done for this class, including all drafts of all papers, so please save everything. On average, you should expect to spend at least nine hours per week outside of class on this course. If you are concerned about the time that you are spending on this class, come see me.

Summary & Response. These short papers should cover three things. (1) A one paragraph summary of the reading (2) a one paragraph reflection on how this reading relates to your future professional practice as a teacher and (3) A third paragraph that has at least three comments, questions, or insights about how this reading relates to other things you have read this semester. Also, some S&R's will be quizzes or Jigsaw presentations. More details about this will be given when those come up in the semester.

Professionalism: It is my expectation that you attend every class and participate fully in group activities and classroom discussions.

Due dates: Due dates can be found in the calendar at the end of the syllabus.

Hints for Success: The best approach is to strive for a solid understanding of the course topics and to accept at the start that this necessarily entails some struggling with ideas and feelings of frustration. The course problems take time, especially time to explore and think about the ideas. Often your will need to walk away for a while or for a day, and return to a problem for a second or third look before writing up your response. Expect this. However, do not get behind on the problems. Try to cultivate an approach that is a nice balance between "just getting it done" and avoiding it altogether. Stay connected, and come see me if you are having difficulties.

Group Work: We will often work in groups in this course. Whenever a group hands in a written assignment, they are required to put on the paper the names of those who participated fully, and only those names. Each person must sign the final copy. Your signature certifies that you participated equally in the project. It is dishonest to turn in work that is not solely and equitably the creation of the team members. You are not required to include on the report the name of someone who started but did not finish,

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or who did not contribute their share. Also, as the instructor I reserve the right to assign group members different grades if it doesn't appear that every contributed equally.

Outside Sources: A central aim of this course is to help you learn to develop your own ideas about mathematical questions. You therefore should **NEVER** consult any reference materials outside of the course texts to complete labs. This includes materials found on the internet. *The ideas that you present should be your own*.

Office Hours: My office hours are listed above, and will be held in 110 Education North . Please come see me! The best way to make an appointment or to get in touch with me for any other reason is to send me an email.

Attendance: It is absolutely vital for an interactive class like this that you come to class and participate. Your attendance will count as part of your class participation grade, and excessive late arrivals will count as an absence.

- The final exam time can be found at http://www.tamuc.edu/admissions/registrar/academicCalendars/final-exam-schedule.aspx
- Campus Concealed Carry (new): Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to (http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesP rocedures/34SafetyOfEmployeesAndStudents/3 4.06.02.R1.pdf) and/or consult your event organizer). Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.
- The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services, Texas A&M University-Commerce, Gee Library, Room 132, Phone (903)

886-5150 or (903) 886-5835, Fax (903) 468-8148, email: StudentDisabilityServices@tamuc.edu

- Basic Tenets of Common Decency: "All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (Student's Guide Handbook, Policies and Procedures, Conduct.) This means that rude and/or disruptive behavior will not be tolerated.
- A&M-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.
- Tutoring services up to the level of Calculus I provided by the Math Skill Center (Binnion Room 328) with the following hours: MW, 8am–8pm; TR, 8am–6pm; and F 8am–12pm.
- "Students should not attend class when ill or after exposure to anyone with a communicable illness. Communicate such instances directly with your instructor. Faculty will work to support the student getting access to missed content or completing missed assignments."

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors 'guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

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The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel.

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Tentative Due Dates

All assignments are due the Sunday after they are assigned at 11:59 pm. All due dates are subject to change.

Week	Tuesday	Thursday	Reading	For Next Week
1	Intro/Syllabus Lab 0: Teaching Philosophy draft Lab 1: Tie the Knot	• 1.1.a • Project Minute Papers	• Benny	Practice Content Test Lab 1 Topic Paper Reading
2		• 1.1.b • Lab 2: Rectangles • *TOPIC PAPER DUE* • *Lab 0 Due* • *Lab 1 Due* • *Benny S&R Due*	• Watch Sean Numbers Video[1]	Practice Content Test Lab 2 Pre-proposal Reading
3	• 1.1.c • Special Education Lecture • *Lab 2 Due*	• 1.1.d (GRADED) & 1.1.e • Lab 3: Cup & Chip • Noticing Assigned • *Pre-proposal due*	• Literature Review (Video)	Practice Content Test Lab 3 Noticing Part 1 Pre-proposal Revisions Reading

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[1] https://deepblue.lib.umich.edu/handle/2027.42/65013

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4	1.1.f Lab 4: Angry Birds How to Find & Code Articles *Lab 3 Due*	Lab 5: 1.1.g Noticing Activity *Noticing Part 1 Due* *Pre-proposal revisions due* *Literature Review S&R Due*	• Make a one Page handout for motivation Jigsaw (Thursday) • BPT1 Ch. 1 S&R	• Practice content test • Find and Code article • Reading • Motivation Jigsaw • Lab 4 • Lab 5
5	• 1.2.a • Lab 6: Moose • *BPT1 S&R Due* • *First Article Due* • *Lab 4 Due*	• 1.2.b • *Motivation Jigsaw* • *Noticing Due* • *Lab 5 Due*	• Reinhart (2000) (Tuesday) • Make a one-page handout for ELL Jigsaw (Thursday)	• Practice content test • Find and code 4 articles • ELL Jigsaw • Reading • Lab 6
6	• 1.2.c • Lab 7: Trig Review I • *Reinhart (2000) S&R Due* • *Lab 6 Due*	1.2.d (GRADED) & 1.1.e *ELL Jigsaw* *Coding (4) Due*	• BPT1 Chapter 2 (Tuesday) • Make a one-page handout for Equity Jigsaw (Thursday)	• Practice content test • Find and code 3 articles • Reading • Lab 7
7	• 1.2.f • Lab 8: Trig Review II • *BPT1 Ch 2 S&R* • *Lab 7 Due*	1.2.e Lab 9: 1.2.g *Coding (3) Due*	• BPT1 Ch 3	Practice content test Find & Code 4 articles Reading AI Jigsaw Lab 8 Lab 9

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Week	Tuesday	Thursday	Reading	For Next Week
8	• A.1.a • *AI Jigsaw* • *BPT1 Ch 3 S&R* • *Lab 8 Due* • *Lab 9 due*	• A.1.b • Lab 10: Complex Numbers • *Coding (4)*	• BPT1 Ch 4 (Tuesday)	• Practice content test • Find & Code 3 articles • Cut out your codes on all but last 3 articles • Reading • Lab 10
9	A.1.c Lab11: Shipwreck & Murder *BPT1 Ch 4 S&R* *Lab 9 Due*	• A.1.d • *LIT REVIEW CODING DAY* • *Coding (3) due* • *Lab 10 Due*	• BPT1 Ch 5 S&R (Tuesday) • Make a one-page handout for BPT2 Jigsaw	• Practice Content test • Finish coding • Write 1 page lit review • Reading • Lab 11
10	• A.1.e • Lab 12: Sequences • *BPT1 Ch 5 S&R* • *Lab 11 Due*	• Lab 13: A.1.f • *1 page lit review due*	• BPT1 Ch 6 S&R (Tuesday) • Make a one-page handout for HLP Jigsaw	• Practice content test • Write lit review • BPT2 Jigsaw • Reading • Lab 12 • Lab 13
11	• B.1.a • *BPT2 Jigsaw* • *BPT1 Ch 6 S&R Due* • *Lab 12 Due*	• B.1.b • Lab 14: Calc Review I • *Lab 13 Due* • *3 pages lit review + intro + references*	• Blueprints S&R • Find and bring a high school or middle school textbook to class (Thursday)	• Practice content test • Write lit review • Special Education Jigsaw • Reading • Lab 14

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12	• B.1.c • *Special Education Jigsaw* • *Blueprints S&R* • *Lab 14 Due*	B.1.d Lab 15: Blueprints *LIT REVIEW DUE!!*	• BPT1 Ch 7 (Tuesday)	Practice content test Reading Lab 14 and Lab 15
13	• B.1.e • Intervention Day (bring a computer) • *BPT1 Ch 7* • *Lab 15 Due*	B.2.a Lab 16: Viewing Tubes	TBD #1	• Practice Content Test • Intervention • Reading • Lab 16
14	B.2.b Reflection Day (bring a computer) *Intervention Due* *TBD #1 S&R Due*	■■■■■■■■■■	TBD #2	Practice Content Test Final Paper Draft Write Final Presentation Make Portfolio Reading
15	B.2.c Lab 17: Autobiography *Final Paper Draft Due* *TBD #2 S&R Due*	B.2.d Lab 18: Formative Assessment Lab 19: Teaching Philosophy Revised	TBD #3	• Practice Content Test Due • Write final presentation • Make portfolio • Lab 18 • Lab 19
16	■■■■■■■■■■	• *Final Paper Due* • *Reflective Portfolio Due* • *S&R TBD #3 Due* • *Final Presentations Due* • *Lab 17 due* • *Lab 18 due* • *Lab 19 due*		