

MATH 4990 COURSE SYLLABUS

Spring 2023

No Textbook for this Course

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OFFICE HOURS: Monday – Thursday 1:00 – 3:00 PM

I can have Zoom sessions upon request during these times. With some advance notice, I can be available for private Zoom sessions at other times, including times during the evening before 9:00 PM.

Some of us may have to quarantine this semester. If I need to quarantine, then the class will go fully remote. I will update the syllabus if this happens. If you need to quarantine, it is critical that you keep in touch with me. You will be required to attend class via Zoom.

MATH 4990--Seminar in Mathematics. This course counts as three credits and is designed for mathematics majors. The course is normally taken during the last semester of coursework and is required of all mathematics majors. This course is specifically designed to expose math majors to content not covered in their particular concentration but frequently appearing on exit exams and other standardized mathematics tests like the GRE. Credit is pass-fail.

Prerequisites: This course assumes participants are mathematics majors in their senior year; and, as such that participants have successfully completed undergraduate mathematics courses in their concentration commensurate with that status. All participants are expected to have completed Calculus I, II, and III as well as at least one of Differential Equations I, Linear Algebra, Abstract Algebra I, Introduction to Topology, and Theory of Calculus.

Purpose: This course is a capstone seminar course for graduating mathematics majors, designed to help them review/learn anew, assimilate, connect, and extend concepts from various mathematics courses in the undergraduate major. This includes material from courses not taken by every math major.

Objective: Upon completion of the course, each graduating senior will have

- gained a broad perspective of mathematics, mathematical activity, and limited exposure to basic topics from Differential Equations I, Linear Algebra, Abstract Algebra I, Introduction to Topology, and Theory of Calculus;
- prepared for the Major Field Test in Mathematics.

Topics Covered: This course is designed to help students chart a successful course of study for the Major Field Test (MFT). Topics covered are taken from the content most frequently appearing on the exam --- topics from the calculus sequence, Differential Equations I, Linear Algebra, Abstract Algebra I, Introduction to Topology, and Theory of Calculus.

We will begin the course with a diagnostic exam designed to mimic the content of the MFT. The point of this exam is to let you see what areas of mathematics you have studied in the past and need most to review.

Your D2L course shell contains a large collection of review problems drawn from five broad areas --- Calculus, Differential Equations, Linear Algebra, Abstract Algebra, and Topology / Analysis. Everyone will work through the Calculus problems, and you will use the outcome of your diagnostic exam to choose one of the other four areas to focus on during the first half of the semester.

Calculus --- 65 problems

DE --- 18 problems

Linear Algebra --- 20 problems

Abstract Algebra --- 25 problems

Topology/Analysis --- 23 problems

I will post a signup sheet for the four topics after the diagnostic exam. There is a limit of ten people per topic; signup is first-come, first-served. During the first eight weeks of the semester, you will work together in your topic group during and outside of class to complete at least 80 problems from Calculus and your chosen set of topic problems. Your topic group will compile an electronic "notebook" containing the solutions to all of the problems, and you must sign off on at least five of the problems, including at least one in your chosen topic. I will look over the

notebooks for completeness and will select at random one of the problems each of you sign off on. You must meet with me in my office to discuss the problem I choose for you.

At the beginning of the semester I will also assign you to three-person teams based on your chosen concentration. Early in the semester, your team must select a detailed topic relevant to your concentration and prepare a forty-minute presentation on that topic. The purpose of the presentation is for you to explain your concentration to others in the class, especially those who have chosen a different concentration. You may engage the class with activities, provide a detailed lecture, present solved problems with appropriate background information --- whatever allows you to motivate your concentration. I must approve your team's chosen topic by Week 3 of the semester. Presentations will begin on Week 9 and should take about three weeks to complete. Each of you must submit a short report detailing your contribution to the presentation.

Grading: This course is graded Pass-Fail. Whether or not you pass will be determined by the following criteria.

- **Attendance:** Attendance is required. Missing more than three class meetings will result in failure of the course. If you are more than ten minutes late, I will count that as a half-class absence.
- **Major Field Test (MFT):** All graduating math majors must take the MFT; unless you are not a math major or have already taken the MFT, failure to do so will result in failing the course. The MFT will be given online through the testing center. MFT scores fall in the range [120,200]. You must score at least 140 on the MFT to pass the course.
- **Participation:** You are expected to be an active participant in the preparation and discussion of the problems your group is assigned, you must fully solve the problems your topic group assigns you, and you must fully participate in the development or execution of your concentration team's one-hour presentation.

The MFT exam will tentatively be open from Monday April 17 to Monday April 24. You will need to reserve a time at the testing center to take the exam. I will provide more information about this once I receive confirmation from the testing center.

THERE ARE NO OPPORTUNITIES FOR EXTRA CREDIT IN THIS COURSE.

This syllabus is only a guide for your convenience; I reserve the right to make changes as class needs dictate.

Important dates:

Jan 30 --- Last day to drop without a grade

March 26 --- Last day to drop with a "W"

March 6 – 11 --- Spring Break (No Classes)

April 27 --- Study Day (No Classes)

April 28 – May 4 --- Finals Week

IMPORTANT: It is Department policy not to grant withdrawals after the withdrawal deadline has passed, unless circumstances have arisen which make it impossible for you to complete the course. Late withdrawals must be approved by the Department Chair and often require documentation for the extenuating circumstances.

MTSU COVID-19 Policy

Attendance: Students should not attend an on-ground, in-person class if they are ill, have any symptoms listed in the PreClass COVID-19 Self-Assessment, have tested positive for COVID-19, or have been in close contact with others who have tested positive. If they have tested positive or have been in close contact with someone who has, they should consider self-quarantine (see guidelines below). Students are expected to keep their instructors informed regarding their status when they are absent from class and act with good faith and honesty when determining whether or not they attend class. For more information, visit [MTSU Policies](#).

Isolation/Quarantine: MTSU has updated its isolation protocols as recommended by state and federal public health officials. The isolation requirement has been decreased to five days if symptoms are resolving, so that on Day 6 students and employees can resume activities (with masking through Day 10). Also, fully vaccinated individuals (boosted or within six months of last mRNA vaccine or within last two months of J&J) do not need to quarantine. And, those who are unvaccinated or not meeting full vaccination criteria need to quarantine five days, test on Day 5, and if negative, can resume activity wearing a mask through Day 10.

Masking: All students, faculty, and staff are strongly encouraged to mask and observe appropriate six-foot minimum social distancing while on campus. Masks are defined as disposable single-use paper masks, cloth face coverings with ear loops or ties, balaclavas, gaiters, and bandanas that cover the nose and mouth.

Zoom behavior: [University Policy 540 Student Conduct](#) stipulates that appropriate behavior is required both in person and online. Appropriate language and attire are required on Zoom, both in lecture and break-out rooms. For additional guidance on MTSU rules, facilities, and schedules, visit [MTSU Coronavirus Response](#).

UNIVERSITY POLICIES

DROP AND WITHDRAWAL POLICY: Please note the Drop Policy and Withdrawal Procedures as they are stated in the Current Registration Guide. A grade of "I" will be given only in accordance with University Policy. No grade of "W" will be assigned after the official drop date except in situations involving extreme extenuating circumstances beyond the student's control. In particular, a "W" will not be granted merely because the student is failing. Students should be aware that missing the official drop date and thereby receiving an "F" can have ramifications on financial aid.

Reasonable Accommodations for Students with Disabilities: Middle Tennessee State University is committed to campus access in accordance with Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973. Any student interested in reasonable accommodations can consult the Disability & Access Center (DAC) website www.mtsu.edu/dac and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu.

Title IX (Harrasment): If you believe you have been harrassed, discriminated against, or have been the victim of sexual assault, dating or domestic violence, or stalking, please contact a Title IX Deputy Coordinator at 615-898-2185 or 615-898-2750 or visit <http://www.mtsu.edu/titleix/> for resources. As a faculty member, I am legally obligated to share reports of such incidents with the MTSU Title IX coordinator.

LOTTERY STATEMENT: To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility. If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you will not be able to regain eligibility at a later time. For additional Lottery rules, please refer to your Lottery Statement of Understanding form (<http://www.mtsu.edu/financial-aid/forms/LOTFEV.pdf>) or contact your MT One Stop Enrollment Coordinator (<http://www.mtsu.edu/one-stop/counselor.php>).

ACADEMIC MISCONDUCT: Middle Tennessee State University takes a strong stance against academic misconduct. Academic Misconduct includes, but is not limited to, plagiarism, cheating, and fabrication. Plagiarism, cheating, fabrication, or facilitating any such act. For purposes of this section, the following definitions apply:

1. **Plagiarism:** The adoption or reproduction of ideas, words, statements, images, or works of another person as one's own without proper attribution. This includes self-plagiarism, which occurs when an author submits material or research from a previous academic exercise to satisfy the requirements of another exercise and uses it without proper citation of its reuse.
2. **Cheating:** Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. This includes unapproved collaboration, which occurs when a student works with others on an academic exercise without the express permission of the professor. The term academic exercise includes all forms of work submitted for credit or hours.
3. **Fabrication:** Unauthorized falsification or invention of any information or citation in an academic exercise.

Going online and taking information without proper citations, copying parts of other student's work, creating information for the purposes of making your paper seem more official, or anything involving taking someone else's thoughts or ideas without proper attribution is **academic misconduct**. If you work together on an assignment when it is not allowed, it is **academic misconduct**. If you have a question about an assignment, please come see me to clarify. Any cases of academic misconduct will be reported to the Office of Academic Affairs for violating the academic honesty requirements in the student handbook. They will also result in failure for the course. Remember – ignorance is NOT a defense.

Classroom Misconduct: The instructor has the primary responsibility for maintenance of academic integrity and controlling classroom behavior, and can order the temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or conduct that violates the general policies of the Institution for each class session during which the conduct occurs. Extended or permanent exclusion from the classroom, beyond the session in which the conduct occurred, or further disciplinary action can be effected only through appropriate procedures of the Institution. If an instructor wishes to remove a student from the classroom for a longer period of time or permanently, he/she must refer the student to the Office of Judicial Affairs and Mediation Services.

Disruptive behavior in the classroom may be defined as, but not limited to, behavior that obstructs or disrupts the learning environment (e.g., offensive language, harassment of students and professors, repeated outbursts from a student which disrupts the flow of instruction or prevents concentration on the subject taught, failure to cooperate in maintaining classroom decorum, etc.), text messaging, and the continued use of any electronic or other noise or light emitting device which disturbs others (e.g., disturbing noises from beepers, cell phones, palm pilots, lap-top computers, games, etc.).

Please note that the rules of proper conduct still apply to Zoom sessions. The norms that apply in face-to-face conversations also apply to Zoom sessions. Use acceptable viewing angles and do not have offensive material in your background --- failure to do so could leave you open to harassment complaints and possible legal action.