

**Syllabus**  
**Fall Semester, 2026**  
**MATH 3243, Advanced Calculus**  
**MW, 10:30–11:45 AM**  
**Technology-Enhanced Learning Center, Room 1114**

**Text:** *Elementary Analysis: The Theory of Calculus*, Second Edition, by Kenneth A. Ross.

You can find a link to purchase the text book on my web site.

**Instructor:** Dr. Mark Faucette

**Office:** Technology-Enhanced Learning Center, Room 2247

**Phone:** My contact phone number is 470-729-1129. This is my Google voice phone number. It will ring my campus phone and my cell phone.

**E-Mail:** My e-mail address is [faucette@westga.edu](mailto:faucette@westga.edu).

**The Web:** My web page is at URL <http://mfaucette.dyndns.org>. The full course syllabus is located on my web site and can be downloaded as a pdf file. It is the student's responsibility to download and/or to print the syllabus and to follow it.

**Office Hours:** My office hours are

- MW: 1:30–2:30 PM
- F: 9:00–11:30 AM

Other times available by appointment.

I do not hold office hours during final exam week.

**Common Language for Course Syllabi:** Students, please carefully review the following information at the link

<http://www.westga.edu/UWGSyllabusPolicies/>.

It contains important material pertaining to your rights and responsibilities in this class. Because these statements are updated as federal, state, university, and accreditation standards change, you should review the information each semester.

## Grading Policy

**Homework (300 points)** There will be eight homework assignments coordinated with the lectures. The homework assignments are due on Friday. Late homework will not be accepted. Your lowest homework score will be dropped, but you must complete all the assignments. The homework counts three hundred points.

**Tests (400 points)** There will be two tests. Each test counts two hundred points.

**Final Examination (300 points)** There will be one final examination counting three hundred points.

At the end of the semester, the following grading scale will be used:

- 1000 points is the total number of points possible.
- A total of 850–1000 points earns an A.
- A total of 700–849 points earns a B.
- A total of 550–699 points earns a C.
- A total of 400–549 points earns a D.
- A total below 400 points earns an F.

## Expectations

**Course Description:** This course covers the fundamentals of mathematical analysis: convergence of sequences and series, continuity, differentiability, Riemann integral, sequences and series of functions, uniformity, and the interchange of limit operations. It shows the utility of abstract concepts through a study of real numbers, and teaches an understanding and construction of proofs.

**Homework Assignments:** The written homework is extremely important (mathematics is not a spectator sport). The best way to test your knowledge of a concept is to try and use it; this is why you work problems. Homework assignments can be writing intensive, hence a lot of the attention when doing homework exercises should be paid to making cohesive arguments in writing. This will be one of the skills developed in the course.

Collaboration with other students in the class is encouraged, but separate solutions must be written up and collaborators documented at the top right-hand corner of all submitted work.

You may also look to other sources for solutions. However, you must *cite* any outside source you have used in finding your solution. And, you must write up your solution in your own words.

I suggest you make a serious attempt at each problem before consulting a peer or another source.

In general, late homework will not be accepted. However, circumstances may arise that warrant an extension; such an extension request should be emailed to the instructor.

The lowest individual homework grade will be dropped when computing the final homework grade for the course.

**Tests:** There will be two tests given over weekends on Friday, October 2 and Friday, November 20. The tests will contain proof-oriented questions.

**Final Examination:** There will be a final examination administered on Wednesday, December 9, from 12:00 PM to 2:00 PM in room 1114 of the Technology-Enhanced Learning Center. The final examination will have short-answer questions such as examples, counterexamples, computations, etc.

## MATH 3243 Lecture Schedule

Wednesday, August 12	The Set $\mathbb{Q}$ of Rational Numbers
Monday, August 17	The Set $\mathbb{R}$ of Real Numbers
Wednesday, August 19	The Completeness Axiom
Monday, August 24	The Symbols $+\infty$ and $-\infty$
Wednesday, August 26	Limits of Sequences
Monday, August 31	A Discussion about Proofs
Wednesday, September 2	Limit Theorems for Sequences
Monday, September 7	Labor Day Holiday
Wednesday, September 9	Monotone Sequences and Cauchy Sequences
Monday, September 14	Subsequences
Wednesday, September 16	$\limsup$ 's and $\liminf$ 's
Monday, September 21	Some Topological Concepts in Metric Spaces
Wednesday, September 23	Series
Monday, September 28	Alternating Series and Integral Tests
Wednesday, September 30	Continuous Functions
Monday, October 5	Properties of Continuous Functions
Wednesday, October 7	Uniform Continuity
Monday, October 12	Limits of Functions
Wednesday, October 14	More on Metric Spaces: Continuity
Monday, October 19	More on Metric Spaces: Connectedness
Wednesday, October 21	Power Series
Monday, October 26	Uniform Convergence
Wednesday, October 28	More on Uniform Convergence
Monday, November 2	Differentiation and Integration of Power Series
Wednesday, November 4	Basic Properties of the Derivative
Monday, November 9	The Mean Value Theorem
Wednesday, November 11	L'Hospital's Rule
Monday, November 16	Taylor's Theorem
Wednesday, November 18	The Riemann Integral
Monday, November 23	Thanksgiving Recess
Wednesday, November 25	Thanksgiving Recess
Monday, November 30	Properties of the Riemann Integral
Wednesday, December 2	Fundamental Theorem of Calculus

## Homework Policies

I know each of you has taken MATH 3003 so you have been given excellent instruction on how to write mathematical proofs.

What I'd like to tell you here is how your proofs should be presented when you submit them to me.

1. For your homework, please use standard 8 1/2 inch by 11 inch lined notebook paper. I don't care if it has holes or not, but I want it to be the correct size and I want it lined.
2. I do not want any "ragged edges." Do not tear paper out of a spiral bound notebook to hand in.
3. Write only on the front side of the paper. I do not want to have to flip your papers continually from front to back to front to back to grade them.
4. In the upper right corner of the first page should be your name, "MATH 3243," and the homework assignment number.
5. Each problem should begin at the top of a new piece of paper on the left side of the page. If the problem is divided into parts, such as (a), (b), (c), etc., this doesn't mean each of these should start on a new page. However, I'd like each problem to begin at the top of a new piece of paper. If a problem continues onto a second page, that's fine, but I want the start of each problem at the top of a new page.
6. For each problem the first thing you should write down is "Exercise" followed by the exercise number you're working on. Then you should write the problem as stated in the book. This tells me what you're doing.
7. You should next begin your proof with the word "Proof" underlined with a colon following it. This tells me you are starting your proof. If the problem is not a proof but a computation, example, counterexample, etc., simply write "Solution" underlined with a colon following it. Then put your solution.
8. Every mathematical proof should be written in sentences and paragraphs. A mathematical proof is equivalent to an English essay. It should be written that way. This means you probably should write a first draft of each proof before writing a final draft to turn in. I want your proofs to be aesthetically pleasing, as well as mathematically correct.
9. Make sure the logic in your proofs is sound.
10. When you finish your proof, put something to indicate your proof is complete. You can use  $\square$  or  $\blacksquare$  or // or QED or something similar as long as you're consistent.
11. Put your solutions and proofs in the order they are in the text book. I don't want to have to search through your homework to find where you've put each problem.
12. Each of your assignments should be stapled together. This means I do not want them paper-clipped or taped or "crinkle-cornered".

13. Your homework is due on the date given on the Assignments page for your course on my web site.  
There is a link to this page in the section of my web site dedicated to your course.  
This is also where your homework assignments will be posted each week.  
I do not take any work late.
14. You are permitted (and, in fact, encouraged) to work together on the solutions to the weekly homework assignments (with the exception of the pledged problem sets, where you may not work together). However, the work must be your own. You can share ideas and understanding, not proofs or solutions.
15. I am well aware that both the text book and the solution manual are available online free as pdfs. I have both of them. If you choose to copy your homework solutions from a published solution manual, I will catch you and I will fail you in the course. Trust me: I can tell the difference between a proof you can write and a proof a text book author writes. And if you copy from a solution manual, you had best hope it's not the one I have. If so, I'll have sufficient evidence to have you brought up on disciplinary charges with the Dean of Students.

## MATH 3243 Homework Assignments

**Homework #1 (Due Friday, August 28):** Exercises: 1.4, 1.12, 2.2, 2.5, 3.1, 3.6, 4.1, 4.3, 4.14, 5.2, 5.6.

**Homework #2 (Due Friday, September 11):** Exercises: 7.3, 7.4, 8.1ac, 8.4, 8.6., 9.1ac, 9.2ab, 9.3, 9.4, 9.5.

**Homework #3 (Due Friday, September 25):** Exercises: 10.1ace, 10.2, 10.4, 10.6ab, 10.7, 10.10, 10.12, 11.4, 11.10, 11.11, 12.2, 12.3, 12.4, 13.1, 13.2, 13.3, 13.4, 13.7, 13.9, 13.12.

**Homework #4 (Due Friday, October 9):** Exercises: 14.1abf, 14.2abf, 14.5ab, 14.7, 14.13, 15.3, 15.4, 17.4, 17.5, 17.8, 18.5, 18.6, 18.8, 18.10.

**Homework #5 (Due Friday, October 23):** Exercises: 19.5abef, 19.8, 20.1, 20.5, 20.13., 21.3, 21.5, 21.8, 22.6, 22.9, 22.11.

**Homework #6 (Due Friday, November 6):** Exercises: 23.1, 23.6, 24.2, 24.6, 24.9, 25.2, 25.7, 25.9, 26.2, 26.4, 26.6.

**Homework #7 (Due Friday, November 20):** Exercises: 28.2abd, 28.4, 28.6, 28.15, 29.2, 29.5, 30.1, 30.5, 31.1, 31.2, 31.5, 31.11.

**Homework #8 (Due Friday, December 4):** Exercises: 32.1, 32.2, 33.4, 33.7, 34.2, 34.3.

## Academic Honesty Prohibited Conduct<sup>1</sup>

The penalty for violating this policy is failure in the course.

**General standard of conduct:** No student shall knowingly perform, attempt to perform, or assist another in performing any act of dishonesty on academic work to be submitted for academic credit or advancement. The term “knowingly,” as used in the preceding sentence, means that the student knows that the academic work involved will be submitted for academic advancement. “Knowingly” does not mean that the student must have known that the particular act was a violation of the University’s academic honesty policy. A student does not have to intend to violate the honesty policy to be found in violation. For example, plagiarism, intended or unintended, is a violation of this policy.

**Examples of Academic Dishonesty:** The following acts by a student are examples of academically dishonest behavior:

- I. Plagiarism - Submission for academic advancement the words, ideas, opinions or theories of another that are not common knowledge, without appropriate attribution to that other person. Plagiarism includes, but is not limited to, the following acts when performed without appropriate attribution:
  - A. Directly quoting all or part of another person’s written or spoken words without quotation marks, as appropriate to the discipline;
  - B. Paraphrasing all or part of another person’s written or spoken words without notes or documentation within the body of the work;
  - C. Presenting an idea, theory or formula originated by another person as the original work of the person submitting that work;
  - D. Repeating information, such as statistics or demographics, which is not common knowledge and which was originally compiled by another person;
- E. Purchasing (or receiving in any other manner) a term paper or other assignment that is the work of another person and submitting that term paper or other assignment as the student’s own work.
- II. Unauthorized assistance - Giving or receiving assistance in connection with any examination or other academic work that has not been authorized by a faculty member. During examinations, quizzes, lab work, and similar activity, students are to assume that any assistance (such as books, notes, calculators, and conversations with others) is unauthorized unless it has been specifically authorized by a faculty member. Examples of prohibited behavior include, but are not limited to, the following when not authorized:
  - A. Copying, or allowing another to copy, answers to an examination;
  - B. Transmitting or receiving, during an examination, information that is within the scope of the material to be covered by that examination (including transmission orally, in writing, by sign, electronic signal, or other manner);
  - C. Giving or receiving answers to an examination scheduled for a later time;
  - D. Completing for another, or allowing another to complete for you, all or part of an assignment (such as a paper, exercise, homework assignment, presentation, report, computer application, laboratory experiment, or computation);

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<sup>1</sup>The content of this page is taken from the document *Academic Honesty Policy (A Culture of Honesty)*, (§5, The University of Georgia.

- E. Submitting a group assignment, or allowing that assignment to be submitted, representing that the project is the work of all of the members of the group when less than all of the group members assisted substantially in its preparation;
  - F. Unauthorized use of a programmable calculator or other electronic device.
- III. Lying/Tampering/Bribery - Bribery or giving any false information in connection with the performance of any academic work or in connection with any proceeding under this policy. This includes, but is not limited to:
- A. Giving false reasons (in advance or after the fact) for failure to complete academic work. This includes, for example, giving false excuses to the Faculty Member or to any University official for failure to attend an exam or to complete academic work;
  - B. Falsifying the results of any laboratory or experimental work or fabricating any data or information;
  - C. Altering any academic work after it has been submitted, unless such alterations are part of an assignment (such as a request of an instructor to revise the academic work);
  - D. Altering grade, lab, or attendance records. This includes, for example, the forgery of University forms for registration in or withdrawal from a course;
  - E. Damaging computer equipment (including disks) or laboratory equipment in order to alter or prevent the evaluation of academic work, unauthorized use of another's computer password, disrupting the content or accessibility of an Internet site, or impersonating another to obtain computer resources;
  - F. Giving false information or testimony in connection with any investigation or hearing under this policy;
  - G. Submitting for academic advancement an item of academic work that has previously been submitted (even when submitted previously by that student) for academic advancement, unless done pursuant to authorization from the Faculty Member supervising the work or containing fair attribution to the original work.
- IV. Theft - Stealing, taking or procuring in any other unauthorized manner (such as by physical removal from a professor's office or unauthorized inspection of computerized material) information related to any academic work (such as exams, grade records, forms used in grading, books, papers, computer equipment and data, and laboratory materials and data).
- V. Other - Failure by a student to comply with a duty imposed under this policy. However, no penalty is imposed under this policy for failure to report an act of academic dishonesty by another or failure to testify in an academic honesty proceeding concerning another. Any behavior that constitutes academic dishonesty is prohibited even if it is not specifically listed in the above list of examples.