

**MATH 262**  
**Unified Calculus and Analytic Geometry II**

**INSTRUCTOR:** Jon-Michael Wimberly  
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**OFFICE:** Hume 205  
**OFFICE HOURS:** MW 10:30 a.m. - 1:30 p.m.  
TTh 12:30 - 2:00 p.m.

**TEXT:** *Calculus: Early Transcendentals 3<sup>rd</sup> Edition* w/ binder + MyMathLab by William Briggs, Lyle Cochran, Bernard Gillett, and Eric Schulz  
**ISBN:** 9780134763644

**DESCRIPTION AND LEARNING OUTCOMES:**

- Students who successfully complete Math 262 should be able to determine an antiderivative for polynomial, trigonometric, exponential, logarithmic, rational, and radical functions using a variety of methods. We will cover Chapters 5, 6, and 8. Students should also be able to write and evaluate definite integrals that represent plane area, volume, arc length, and surface area.
- See the end of this document for a detailed list of learning objectives covered in the course organized by section within each test module.

**Mathematica (do not purchase)** – available on the computers in the Weir Hall Computer Lab or install on your computer using the university site license; installation instructions at <http://www.mcsr.olemiss.edu/appssubpage.php?pagename=mathematica.inc>

**HOMEWORK:**

- Homework will be assigned for each section of material covered, and will count for a total of 100 points.
- The homework grade will be an average of the highest 16 completion percentages.
- Homework assignments will be done on the computer using the MyMathLab software.
- Homework assignments may be done as many times as needed before the due date, with only the best score counting toward the student's grade.
- Homework must be submitted by 11:59 p.m. on the due date. **There will be no extensions on homework due dates.**
- Homework assignments may be completed after their due dates until **Sunday, May 3<sup>rd</sup> 2020** for half credit.

**TESTS and PRACTICE TESTS:**

- There will be a Practice Test for each of the four tests and the final exam. The Practice Test is taken through the MyMathLab website.
- Practice Tests are due by the **beginning of class** on the day of the corresponding test.
- Practice Tests can be taken an unlimited number of times. The highest score is kept. Each Practice Test is worth a maximum of 5 bonus points applied its associated test
- The purpose of the Practice Tests are to prepare you for the in class tests.
- There will be four (4) major tests during the semester taken in class each worth 100 points (400 points total).
- Tests are taken on paper and in the regular classroom at the regular class meeting time for the course.
- Students must show all work for each test question in order to receive credit.

**REPLACEMENT GRADE POLICY:**

- There are no make-up tests given in this class for any reason. If a test is missed for ANY reason, a grade of zero (0) will be given.
- There will be times students must miss test dates for unforeseen reasons. To protect students from these situations, this class employs a Replacement Grade Policy where the percent correct score on the final

exam will replace the lowest of the five test grades IF the final exam score is greater than the lowest of the five test grades.

- While the Replacement Grade Policy also applies to students who take all tests, the Replacement Grade Policy is designed to **protect** students who must miss a test due to unforeseen reasons. The Replacement Grade Policy is **not** designed as a buffer for the overall grade.
- Any student who must miss a scheduled test because of an official University function must reschedule and take the test at a time BEFORE the scheduled time of the exam. NO OTHER rescheduling will be allowed.

#### **FINAL EXAM:**

- The final exam is comprehensive and will count 200 points.
- Any student who must miss the final exam because of an official University function must reschedule the exam on some other mutually satisfactory date.
- Any student having three or more final exams scheduled for the same day will arrange with the instructor to take either the 12:00 p.m. OR the 7:30 p.m. exam on some other mutually satisfactory date.
- Every student must take the final exam at the time scheduled. The only exceptions are the students affected by the two situations above.
- An “I” grade will not be given without the permission of the Department of Mathematics.

**FINAL GRADE:** The cumulative point total for the course is 700 points – tests: 400, homework/quiz: 100, final exam: 200. The following point scale will be used to determine your final grade:

<u>Grade</u>	<u>Point Total</u>
A	630 to 700
A-	616 to less than 630
B+	602 to less than 616
B	560 to less than 602
B-	546 to less than 560
C+	532 to less than 546
C	490 to less than 532
C-	476 to less than 490
D	420 to less than 476
F	below 420

**ATTENDANCE POLICY:** There is an attendance policy for this class.

- Students are allowed five (5) absences in a MWF section without penalty.
- Students are allowed three (3) absences in a TTh or MW section without penalty.
- Students who accumulate more absences than are allowed for their specific section will have ten (10) points deducted from their final point total FOR EACH absence above the limit for their respective section.
- Attendance is taken via the student ID card scanners in class. The scanners open 10 minutes before class starts and close 10 minutes after class begins. Students are required to have their student ID to scan into class. Attendance will not be taken without a student ID card.
- Students must take the responsibility of telling the instructor in advance if they must leave early, and must discuss with the instructor immediately after class if they entered the classroom after class has begun. It is the student’s responsibility to make sure that their attendance record is correct.
- Attendance fraud is a form of academic dishonesty. Students engaging in fraud will fail the class and be reported to the university for further disciplinary action. If a student must leave class after signing in, it is the responsibility of the student to communicate with the instructor before class begins.
- If an emergency arises and a student must leave class after scanning in, then the student must notify the instructor within 24 hours of the end of class.

- Random attendance checks will be made in the form of role call at some point in class. If a student has been scanned into class using his or her student identification card but is not present for random role call, then that student will be found to have fraudulently attended class.

#### TEST INFORMATION:

- Tests will be administered during regular class meetings in the regular classroom (not the Jackson Avenue Center).
- Each student will be expected to complete the test within the time frame of one class meeting. Students who need accommodations for in-class work should see the Disability Access and Inclusion Section below for more details.
- Under no circumstance will a late or make-up test be given to any student.
- During a test, it is crucial that the test administrator (instructor, professor, TA, etc.) be able to see the eyes of a student taking the test. If any article of clothing obstructs the view of a student's eyes, then the test administrator reserves the right to have the student remove the obstruction. This includes hats, sunglasses, hoods, etc. Students wearing religious garments are asked to make sure those garments do not obstruct the view of a student's eyes during the test.
- During a test, no student will be allowed to have a cell phone, smart watch, outside calculator, or any other device that communicates to another device wirelessly (medical device accommodations excluded). These types of devices **must** be secured in a closed bag such as a backpack or messenger bag **not in a pocket on an article of clothing**.
- Any student who violates the above policy will receive a zero grade **that cannot be replaced using the Replacement Policy for the course**.

#### CALCULATORS:

- Calculators will not be used as part of any in class assessment (test, quiz, final exam, etc.). Calculators of all type are allowed on homework.
- Cell phone or iPod calculators may not be used during tests. If a student is caught using a cell phone or iPod calculator during a test, he/she will receive a grade of zero (0) on said test **that cannot be replaced**.

#### ELECTRONIC DEVICES:

- All cell phones, pagers, and other electronic equipment should be turned off and put away during the class period.

#### CHEATING:

- The following statement is the policy of the Department of Mathematics in MATH 123 regarding cheating:

Offenses: Cheating on any exam or quiz, theft or attempted theft of exam questions, possession of exam questions prior to an examination, or the use of an illegal calculator on tests 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.

#### WITHDRAWAL DEADLINE: **Monday, March 2<sup>nd</sup>**

- After the Course Withdrawal Deadline, courses dropped will be recorded on University records and the grade of W will be recorded if the student is not failing the course at the time of withdrawal; otherwise, the grade of F will be recorded. 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.

## DETAILED LEARNING OUTCOMES and SUGGESTED EXERCISES:

- Below is a detailed list of learning outcomes covered in each section from the textbook covered in the course.
- Associated with each section is a problem set of suggested exercises. **These problems are supplemental to the course and are not the homework assignments.**

### I. Test 1

#### Section 5.1: Approximating Area under Curves

- Approximate Area by Riemann Sums (Left, Right, Midpoint), Sigma Notation, Evaluate Riemann Sums using Sigma Notation
- Suggested Exercises: 23-32, 49, 50

#### Section 5.2: Definite Integrals

- Calculate Net Area, Evaluate Definite Integrals using Geometry, Properties of Definite Integrals, Evaluate Definite Integrals Using Limits
- Suggested Exercises: 35-38, 39-42, 47-50, 52, 53, 59-66, 79-84

#### Section 5.3: Fundamental Theorem of Calculus

- Determine and Use an Area Function to Calculate Definite Integrals, Use the Fundamental Theorem of Calculus to Evaluate Definite Integrals and Differentiate Integrals
- Suggested Exercises: 13, 14, 17-22, 25-60, 73-78

#### Section 5.4: Working with Integrals

- Integrating Even and Odd Functions, Calculating the Average Value of a Function using Integration, Mean Value Theorem for Integrals
- Suggested Exercises: 11-19, 25-30, 39-42

#### Section 5.5: Substitution Rule

- Applying the Substitution Rule to Indefinite and Definite Integrals
- Suggested Exercises: 17-70

### II. Test 2

#### Section 6.2: Regions Between Curves

- Determining the Boundaries of a Region Bounded By Two Curves, Calculating the Area Between Curves by Integrating with Respect to  $x$ , Calculating the Area Between Curves by Integrating with Respect to  $y$
- Suggested Exercises: 9-25, 37-51

### **Section 6.3: Volume by Slicing**

- Using the General Slicing Method, Exploring Disk and Washer Shaped Solids, Using the Disk Method about the x-Axis and y-Axis, Using the Washer Method about the x-Axis and y-Axis, Using the Disk and Washer Methods When Revolving about Other Lines
- Suggested Exercises: 3-6, 11-16, 17-20, 22-27, 37-43, 50-55

### **Section 6.4: Volume by Shells**

- Exploring Shell Shaped Solids, Using the Shell Method about the x-Axis and y-Axis, Determining the Appropriate Method (Disk, Washer, or Shell), Using the Shell Method When Revolving about Other Lines
- Suggested Exercises: 9-24, 35-38, 39-44

## **III. Test 3**

### **Section 6.5: Length of Curves**

- Arc Length for  $y = f(x)$  and  $x = g(y)$
- Suggested Exercises: 9-20

### **Section 6.6: Surface Area**

- Surface Area Formula, Calculating Area of a Surface of Revolution
- Suggested Exercises: 9-20

### **Section 8.1: Basic Approaches (to Integration)**

- Algebraic Manipulations, Basic Long Division, Completing the Square, Exploration of Interesting Substitutions
- Suggested Exercises: 7-40

### **Section 8.2: Integration by Parts**

- Integration by Parts for Indefinite and Definite Integrals
- Suggested Exercises: 9-28, 33-40

## **IV. Test 4**

### **Section 8.3: Trigonometric Integrals**

- Integration Powers of  $\sin x$  and  $\cos x$ , Integration of Products of Powers of  $\sin x$  and  $\cos x$ , Reduction Formulas, Integration of Products of Powers of  $\tan x$  and  $\sec x$
- Suggested Exercises: 9-16, 23-38

### **Section 8.4: Trigonometric Substitutions**

- Evaluation of Integrals Involving  $a^2 - x^2$ , Evaluation of Integrals Involving  $a^2 + x^2$ , Evaluation of Integrals Involving  $x^2 - a^2$
- Suggested Exercises: 8-26

### **Section 8.5: Partial Fractions**

- Decomposition of Rational Functions using Partial Fractions, Integrating Expressions where PFD Results in Linear Denominators, Integrating Expressions where PFD Results in Repeated Linear Denominators, Integrating Expressions where PFD Results in Irreducible Quadratic Denominators, Simplifying Rational Expressions using Polynomial Long Divisions
- Suggested Exercises: 5-48

### **Section 8.9: Improper Integrals**

- Review of Limits at Infinity, Writing Integrals with Infinite Intervals as Limits, Evaluating Improper Integrals with Infinite Intervals, Expressing Integrals with Unbounded Integrands as Limits, Evaluating Improper Integrals with Unbounded Integrands
- Suggested Exercises: 7-25, 37-42