

Calculus 2

Math 163

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Office Hours
MTW 10:30-11:30 and TR
10-11 (LRC)
Or by appointment

1 Overview

Welcome to Math 163. Here is the UNM course description.

Transcendental functions, techniques of integration, numerical integration, improper integrals, sequences and series, Taylor series with applications, complex variables, differential equations.

(I)

Prerequisite: 162.

2 Course Learning Outcomes

1. Know the definitions, graphs, special values, derivatives and integrals (when possible) of transcendental functions, including exponential, logarithmic, inverse trigonometric and hyperbolic functions.
2. Use the methods of substitution, integration by parts, partial fractions and trigonometric substitution to compute proper and improper integrals. Evaluate improper integrals using correct mathematical limit notation.
3. Use rectangles or trapezoids to approximate integrals.
4. Solve separable differential equations. Plot direction fields and solution curves. Find equilibrium solutions.
5. State the definition of the value of a series, as well as necessary conditions for convergence. Use the definition to determine the value of a series. Determine the value of known Taylor series at particular points. State various tests for convergence, including all conditions, and apply them. Approximate alternating series and estimate the error.
6. Determine the asymptotic behaviour of functions $f(x)$ as $x \rightarrow \infty$ and the limit of indeterminate forms.
7. State the definition of the Taylor series of a function and describe its properties. Find Taylor series using the definition, or by substitution into, or differentiation or integration of known series, and determine their interval/radius of convergence. Approximate functions by Taylor polynomials within the interval of convergence and estimate the error. Include approximations of definite integrals or quantities depending on parameters, such as arise in applications in physics, chemistry, biology and engineering.

8. Use Taylor series to derive Euler's formula for the exponential of a complex number. Evaluate sums, products, powers, roots, and exponentials of complex numbers. Evaluate integrals of complex functions.

3 Required Text

The required text for this course is:

- Calculus, by Thomas, 14th edition.

We will be using MyMathLab (MML), so you will need a MML access code. The courseid is smith73155.

4 Attendance Policy

Attendance in the course is required. If a student misses two classes in the first two weeks of the semester, three consecutive class periods or five total, I reserve the right (but not the obligation) to drop the student from the class. If you stop attending class for any reason, it is your responsibility to make sure you dropped the class, or risk getting a failing grade.

5 Course Structure

Homework will be based on the following.

- In Class Worksheets (50 points)
 - We will be doing in-class worksheets this semester in groups. I will be grading these based off of participation and completion. This means interacting with your group members and having positive discussions.
- MyMathLab Homework (50 points)
 - We will be using MyMathLab for homework. Your homework average will count for your homework points.
- Quizzes (100 points)
 - We will be doing 12 quizzes in class for 10 points each. I will drop the lowest two scores for a total of 100 points. The quizzes will resemble the midterm and final, so they will be good study aides.
- Three Midterms (100 points each)
 - The midterm will cover the first half of the class and will be good practice for the final exam.
- Final (200 points)
 - The final exam will be comprehensive.
- Total (700 points)

6 Grading Policy

Your grades will be calculated as follows.

Point Total	Grade
[686,700]	A+
[644, 686)	A
[630,644)	A-
[616,630)	B+
[574,616)	B
[560,574)	B-
[546,560)	C+
[504,506)	C
[490,504)	C-
[476,490)	D+
[434,476)	D
[420,434)	D-
[0,420)	F

You must receive at least 70% on the final exam to get credit for the class.

7 Make-up Policy

I will allow up to four late submissions of homework assignments.

8 Schedule

- Week 1 (All of Chapters 3,4 and 5, and Section 7.1)
 - Review, Inverse Functions
- Week 2 (7.1-7.3,7.6-7.7)
 - Exponential Functions, Review of Logarithms, Inverse Trig/Hyperbolic Functions
 - Quiz 1: 8/30, Homework 1 Due 9/2
- Week 3 (7.5)
 - L'Hospital's Rule and Review for Exam 1
 - Quiz 2: 9/6
- Week 4 (8.1-8.3)
 - Integration by Parts, Trigonometric Integrals
 - Exam 1: 9/11
- Week 5 (8.4-8.5)
 - Trigonometric Substitution, Partial Fractions Decomposition

- Quiz 3 9/20
- Week 6 (8.7-8.8)
 - Numerical Integration and Improper Integrals
 - Quiz 4 9/27
- Week 7 (7.4,9.2)
 - Differential Equations
 - Quiz 5 10/4
- Week 8 (9.4)
 - Logistic Growth, Review For Exam
- Week 9 (10.1)
 - Sequences
 - Exam 2: 10/16
- Week 10 (10.2-10.3)
 - Series, Integral Tests
 - Quiz 6 (Take Home)
- Week 11 (10.4-10.6)
 - Alternating Series, Convergence Tests
 - Quiz 7 11/1
- Week 12 (10.7)
 - Power Series
 - Quiz 8 11/8
- Week 13 (10.8-10.9)
 - Taylor Series
 - Quiz 9 11/15
- Week 14 (10.10)
 - Error for Taylor Series
 - Exam 3: 11/20
- Week 15 (A.7 and my notes)
 - Complex Series, Euler's Formula
 - Quiz 10 11/27, Quiz 11 (Take Home)
- Week 16

- Review
- Quiz 12 12/3
- Week 17
 - Final Exam

9 Important Dates

Date	Event
8/31	Last day to add or change credit hours or change grade mode on Loboweb
9/7	Last day to drop without a "W"
11/9	Last day to drop without Dean's permission
12/7	Last day to drop with Dean's permission

10 A note on academic integrity

We will follow university policy and on academic integrity.

Having academic integrity is paramount to your success in any class. Plagiarism or cheating is not tolerated. Any instance of this will result in a grade of zero for that assignment. Here is the link to the UNM Academic Dishonesty Policy: <https://policy.unm.edu/regents-policies/section-4/4-8.html>. The policy states:

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or who otherwise fails to meet the expected standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic Dishonesty is defined as: "Academic dishonesty" includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

11 Students with Disabilities

If you have a documented disability, please provide me with a copy of your letter from Equal Access Services as soon as possible to ensure that accommodations are provided in a timely manner.

12 EQUAL OPPORTUNITY AND NON-DISCRIMINATION:

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see page 15 - <http://www2.ed.gov/about/offices/list/201404-title-ix.pdf>). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must

be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>.

Note: This syllabus is subject to change, if needed.