

Calculus with Analytic Geometry II, Spring 2017
Math 112, Section D
Dr. John Gemmer, gemmerj@wfu.edu
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Course Website: <http://users.wfu.edu/gemmerj/Math112D.html>
Office Hours: Tuesday 3-5, Wednesday 1-2, Thursday 2-4
Class Meeting Times: MTWF 8:00-8:50
Class Location: Manchester Hall 020

Textbook: Stewart, James. *Calculus 8th edition*. Cengage Learning, 2015.

Prerequisites: Chapters 1-4 of our text covers the material in a standard first course in calculus. This material is a prerequisite for this course. I will spend three lectures reviewing Chapter 4 but it will only be a superficial coverage. However, knowledge of this material is *critical* to your performance in this course.

Course Description: A further introduction to calculus of a single variable with equal emphasis on integration techniques, calculus of inverse functions, applications of integration and series. Specific topics will include analytic calculation of volume, calculus of transcendental functions, l'Hospital's rule, integration by parts, partial fraction decomposition, separable differential equations, convergence tests of series, power series, Taylor series.

Course Rationale: The development of The Calculus is one of the most profound intellectual achievements of humankind. Applications of calculus have allowed us to understand and manipulate the universe around us in ways unimaginable to our ancestors. For example, the modern theories of electric fields and quantum mechanics which are crucial to much of our modern technological achievements are written in the language of calculus. Moreover, much of modern research in mathematics uses and extends calculus to fuel further technological and scientific breakthroughs. Finally, many jobs in science, economics and business are becoming more and more quantized and the demand for mathematically sophisticated employees is high.

This course will provide an introduction to the basic principles of integral calculus along with some introductory applications of calculus. Along the way students will further improve their analytic and computational skills, mastery of abstract concepts, quantitative as well as qualitative analysis, and their ability to write mathematics.

Class Delivery: The course material will be delivered through a combination of lectures and in class group assignments. Evaluation of the students understanding of the material will be assessed through written homework assignments, online assignments, in-class exams, in class quizzes, in class group work and a final exam.

Course Policies:

♦ **Grading:** Your grade will be based on:

- Weekly written homework: 15%
- Quizzes: 5%
- Group work: 5%
- Three in-class exams: 45% (15% each)
- Final Exam: 30%

You are guaranteed the following grades if your final percentage lies within the following ranges:

90-92.9: A-	93-100: A	
80-82.9: B-	83-86.9: B	87-89.9: B+
70-72.9: C-	73-76.9: C	77-79.9: C+
60-62.9: D-	63-66.9: D	67-69.9: D+

- ♦ **Written homework:** Written homework will be assigned most weeks on Thursday and will be due Friday at the beginning of class the following week. The assigned homework problems will be posted on the course website. Late homework will not be accepted under any circumstances. However, I will drop the lowest homework score from your grade. Written homework must consist of solutions that show all steps, be your own work and be written clearly using complete sentences as appropriate (see homework policy).
- ♦ **Quizzes:** On most Fridays there will be a short 10 minute in-class quiz. These quizzes will consist of a very short problem that will test your knowledge of the prior lectures. These quizzes are to help both the students *and* the instructor understand concepts that students may be struggling with. All quizzes will be announced in class. *There will be no “pop” quizzes.* There are no retakes for missed quizzes, however I will drop the lowest quiz score from your final grade. Quizzes are often indicative of how the instructor grades and what concepts will be emphasized on exams.
- ♦ **Group work:** Throughout the course there will be several unannounced “class works”. These consist of structured group assignments that will be completed during class time. These assignments will generally be exploratory allowing students to learn a new concept through a “hands on” approach.
- ♦ **In-Class Exams:** There will be three in-class exams and a comprehensive final in the course. The tentative dates of these exams are February 2, March 3 and April 7. You must contact me by **January 17** if you have any university-approved conflicts with these dates. Otherwise you may miss the exam only in the case of serious illness or emergency.
- ♦ **Final Exam:** The final exam is scheduled during the Math Block final exam period, at 9:00am on Friday, April 28.

Tentative Course Calendar:

1. Week 1 (1/10–1/13): Review of Chapter 4: 4.1–4.5, 7.7
2. Week 2: (1/17–1/20): Applications of integration: 5.1–5.3
3. Week 3: (1/23–1/27): Calculus of inverse functions: 6.1–6.3
4. Week 4: (1/30–2/2): Calculus of transcendental functions: 6.4–6.5, **Exam #1**

5. Week 5: (2/6–2/10): Inverse trigonometric functions/L'Hospital's rule: 6.6–6.8
6. Week 6: (2/13–2/17): Techniques of integration: 7.1–7.3
7. Week 7: (2/20–2/24): Techniques of integration: 7.4–7.5, 7.8
8. Week 8: (2/27–3/3): Differential Equations: 9.1, 9.3–9.4, **Exam #2**

9. Spring Break: (3/4–3/12) *****

10. Week 9: (3/13–3/17): Sequences and series: 11.1–11.2
11. Week 10: (3/20–3/24): Convergence of series: 11.3–11.4
12. Week 11: (3/27–3/31): Convergence of series: 11.5–11.6
13. Week 12: (4/3–4/7): Convergence of series: 11.7, **Exam #3**

14. Week 13: (4/10–4/12): Power Series: 11.8–11.9
15. Week 14: (4/16–4/21): Taylor Series: 11.10–11.11
16. Week 15: (4/24): Taylor Series: 11.10–11.11
17. Final Exam: (4/28)

Important Dates:

1. February 2: Exam 1.
3. March 3: Exam 2.
4. April 7: Exam 3.
5. April 28: Final exam.

The Honor Code: At Wake Forest, we expect you to behave as honorable citizens of the class, the university, and the world as a whole. When you complete an assignment with your name on it, you are representing that everything you are turning in is your own work. That means that you do not copy from other students, textbooks, or websites. If at any time I become aware of cheating or plagiarism in this course, I will submit the information to the honor council.