

MATH 224-0: INTEGRAL CALCULUS OF ONE VARIABLE FUNCTIONS

Instructor: Rohan Kadakia, rohan@math.northwestern.edu

Office Hours: MW 3:00–4:00 PM, Locy 206

Lecture Time and Location: MTuWTh 1:00–3:00 PM, Lunt 107

Textbook: Stewart, James. *Essential Calculus: Early Transcendentals*. Volume 1 (2nd Edition).

The same textbook is used for Math 220-0. Make sure to buy it with WebAssign. I recommend that you buy the book bundled with WebAssign directly from the publisher, by means of the microsite cengagebrain.com/micro/1-1K0HBH5.

Course Website: Course Management System (a.k.a. Blackboard), courses.northwestern.edu. Students are responsible for checking Blackboard regularly.

Course Description: Integrals, techniques of integration, volumes, arc length, work, differential equations, sequences and series, Taylor polynomials. Prerequisite: Math 220-0 or equivalent

Exams: The final exam will take place on Thursday August 14th, 1:00–3:00 PM. The final will be cumulative. In addition, there will be a midterm exam, scheduled for July 31st, 1:00–2:00 PM (i.e. during the first hour of lecture on that date). The midterm will be cumulative up to that point. There will be no make-up/alternate exam dates.

Exam questions will be closely based on homework exercises. To study for the exams in this course, it is most important to do and redo homework problems!

Quizzes: There will be two short quizzes, given at the ends of the first and third weeks of the course (July 24th, August 7th). The primary purpose of the quizzes is to motivate you to keep up with the material.

Evaluation: Grades will be determined by your scores on these exams and quizzes, as well as weekly homework assignments submitted through WebAssign, according to the percent-wise breakdown below.

WebAssign-ments.....10%

Quizzes (July 24th & August 7th).....10% each

Midterm Exam (July 31st).....30%

Final Exam (August 14th).....40%

Homework: There will be four weekly assignments, totaling 10% of your grade. Assignments must be submitted via WebAssign, which is accessed through the course website. For your convenience, the e-book version of the textbook is included with WebAssign. Homework will be due each Thursday at 11:59 AM; no late assignments will be accepted. WebAssign will automatically grade your homework and you will get immediate feedback. We'll spend time in class going over select problems.

Students with Disabilities: Any student with a documented disability needing accommodations is requested to speak directly to the Office of Services for Students with Disabilities (847-467-5530) and to the instructor as early as possible in the term. All discussions will remain confidential. For more information, visit northwestern.edu/disability.

Academic Honesty: Academic integrity is a fundamental commitment of the University community. Suspicion of an academic integrity violation will be reported immediately to the Dean's Office. For more information on University policies, visit northwestern.edu/uacc.

Sexual Harassment: It is the policy of Northwestern University that no member of the Northwestern community—students, faculty, administrators, or staff—may sexually harass any other member of the community. For more information, visit northwestern.edu/sexual-harassment.

Schedule: You are strongly encouraged to read (or at least skim) textbook sections prior to the lecture in which they will be presented.

Chapter 5: Integrals

7/21	5.1 Areas and Distances
7/21	5.2 The Definite Integral
7/22	5.3 Evaluating Definite Integrals
7/22	5.4 The Fundamental Theorem of Calculus
7/23	5.5 Substitution Rule

Chapter 6: Techniques of Integration

7/23	6.1 Integration by Parts
7/24	6.2 Trigonometric Integrals
7/24	QUIZ 1 (sections 5.1–5.5, 6.1)
7/28	6.2 Trigonometric Substitutions
7/28	6.3 Partial Fractions
7/29	6.5 Approximate Integration
7/29	6.6 Improper Integrals

Chapter 7: Applications of Integration

7/30	7.1 Areas Between Curves & 7.4 Arc Length
7/30	7.2 Volumes
7/31	MIDTERM EXAM
7/31	7.6 Applications to Physics and Engineering
8/4	7.7 Differential Equations
8/4	7.7 Differential Equations

Chapter 8: Series

8/5	8.1 Sequences
8/5	8.2 Series
8/6	8.3 The Integral Test
8/6	8.3 Comparison Tests
8/7	8.4 Alternating Series
8/7	QUIZ 2 (primarily covering sections 7.2, 7.6, 7.7, 8.1–8.3)
8/11	8.4 Absolute Convergence and the Ratio Test
8/11	8.5 Power Series
8/12	8.6 Representing Functions as Power Series
8/12	8.7 Taylor and Maclaurin Series
8/13	Review for final
8/14	FINAL EXAM