

U3600-215 Calculus II

Course Format: Online

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Course credits: 4

Prerequisites: Completion of U3600-114 Calculus I with a C or better or the equivalent.

Course Level: Intermediate, appropriate for second year-or-higher college students.

Course Description: This course will cover techniques of integration, applications of integration and an introduction to differential equations, and sequences and series.

Required Course Materials

- Strang, G., & Herman, E. "Jed." (2016). Calculus Volume 2. Houston, Texams: OpenStax.
- Your Textbook for this class is available for free online. You can get a copy here: openstax.org/details/calculus-volume-2 (Links to an external site.)
- You can also purchase a print version, if you prefer, from OpenStax on Amazon.com. You can use whichever formats you want. Web view is recommended -- the responsive design works seamlessly on any device. If you buy on Amazon, make sure you use the link on your book page on openstax.org so you get the official OpenStax print version.
(Simple printouts sold by third parties on Amazon are not verifiable and not as high-quality.) Calculus Volume 2 from OpenStax, Print ISBN 193816802X, Digital ISBN 1947172131

Optional/Recommended Course Materials

- A graphing calculator, such as a TI-83 or TI-84, is recommended.
- There are no additional or recommended course materials beyond those provided in the links found throughout the course. However, you are actively encouraged to use any resources you find on the internet or in your library to supplement your learning.

Hardware Requirements

- You will need a webcam, speakers, and a microphone. You will complete your exams through an online proctor, requiring all three components. You will need speakers or headphones to listen to video lectures.
- You will also need to submit written work while completing your exams. You will need a scanner or a camera to upload your written work.

Course Learning Objectives

By the end of this course, students will be able to

- Analyze and solve calculus problems related to techniques of integration, solving various applied problems involving integrals.
- Analyze and solve basic problems in differential equations of first order using analytical, geometrical, and introductory numerical methods.
- Analyze convergence and divergence of infinite series and power series, and compute Taylor series for elementary functions.

Course Overview

TOPIC	EVALUATED ACTIVITIES
Unit 1: Techniques of Integration	
Integration by Parts	<ul style="list-style-type: none"> • WeBWork Homework
Trigonometric Integrals	<ul style="list-style-type: none"> • WeBWork Homework
Trigonometric Substitution	<ul style="list-style-type: none"> • WeBWork Homework
Integrals Involving Hyperbolic Functions	<ul style="list-style-type: none"> • WeBWork Homework
The Method of Partial Fractions	<ul style="list-style-type: none"> • WeBWork Homework
Strategies for Integration	<ul style="list-style-type: none"> • WeBWork Homework
Improper Integrals	<ul style="list-style-type: none"> • WeBWork Homework
Numerical Integration	<ul style="list-style-type: none"> • WeBWork Homework
Unit Test	<ul style="list-style-type: none"> • Test 1 - Multiple Choice (2 attempts) • Test 1 - Open-Ended Problems
Unit 2: Applications of the Integral and Differential Equations	
Probability and Integration	<ul style="list-style-type: none"> • WeBWork Homework
Arc Length and Surface Area	<ul style="list-style-type: none"> • WeBWork Homework
Center of Mass	<ul style="list-style-type: none"> • WeBWork Homework
Taylor Polynomials	<ul style="list-style-type: none"> • WeBWork Homework
Solving Differential Equations	<ul style="list-style-type: none"> • WeBWork Homework
Models Involving $y' = k(y - b)$	<ul style="list-style-type: none"> • WeBWork Homework
Graphical and Numerical Methods	<ul style="list-style-type: none"> • WeBWork Homework
First-Order Linear Equations	<ul style="list-style-type: none"> • WeBWork Homework
Unit Test	<ul style="list-style-type: none"> • Test 2 - Multiple Choice (2 attempts) • Test 2 - Open-Ended Problems
Unit 3: Infinite Series	
Sequences	<ul style="list-style-type: none"> • WeBWork Homework
Summing and Infinite Series	<ul style="list-style-type: none"> • WeBWork Homework
Convergence of Series with Positive Terms	<ul style="list-style-type: none"> • WeBWork Homework
Absolute and Conditional Convergence	<ul style="list-style-type: none"> • WeBWork Homework
Ratio and Root Tests; Strategies for Choosing Tests	<ul style="list-style-type: none"> • WeBWork Homework
Power Series	<ul style="list-style-type: none"> • WeBWork Homework
Taylor Series	<ul style="list-style-type: none"> • WeBWork Homework
Unit Test	<ul style="list-style-type: none"> • Test 3 - Multiple Choice (2 attempts) • Test 3 - Open-Ended Problems
Final Exam	<ul style="list-style-type: none"> • Final Exam – Multiple Choice • Final Exam – Open-ended Problems

Evaluation Methods

Your final grade will be based on your performance on the following:

1. WeBWork Homework = 15% of grade
2. Test 1 = 20% of grade
3. Test 2 = 20% of grade
4. Test 3 = 20% of grade
5. Final Exam = 25% of grade

WeBWork Homework (15%)

Your homework will be done using WeBWork. The links for WebWork assignments are given within the individual topic sections in the online course. You may rework the homework problems as many times as you wish. Your instructor will enter your scores from the homework assignments for a section into the online course when you notify them that you are ready to take the exam on that section.

Tests 1, 2 and 3 (60% total; 20% each)

The tests are cumulative, but each test will emphasize material from the most recent section. There is a multiple-choice test which consists of 10 multiple-choice questions. An open-ended test with 4 open-ended questions. Students have 45 minutes to take each test and may use a calculator and note pages to record their work. No notecards, other scratch paper, mobile devices or searching of the Internet is permitted. Students may request to take a second, proctored, attempt on the multiple-choice questions portion only and will have 45 minutes for their second attempt.

Final exam (25%)

Final Exam consists of 10 multiple choice questions and 8 open-ended questions. It is cumulative. Students have 2 hours to complete the final exam and may use a calculator, final exam notecard, and blank paper to record their work. No scratch paper, mobile devices or searching of the Internet is permitted.

Note that once the final exam has been attempted, no further work can be done on course assignments.

Exam Method: Online with Proctoring

This course requires all students to complete all tests, including retakes, and the final exam online with a proctoring service. Students receive two attempts on each Test - multiple choice part. If you elect to make a second attempt, the highest score of either attempt will be recorded.

Grading Scale

The following grading scale is used to evaluate all course requirements and determine your final grade. Grades will always be rounded up to the nearest tenth.

A = 93–100	B = 83–87.9	C = 70–77.9	D = 60–69.9
AB = 88–92.9	BC = 78–82.9		F = Below 60

Pass/Fail Option

Students who enroll in an Independent Learning course under the pass/fail option will receive a final grade of S in place of a final grade equivalent to an A, AB, B, BC, or C and a final grade of U in place of a final grade equivalent to a D or F.