

## Syllabus for Calculus 2 Spring 2025

Math 172 section 003 crn 10595

11:10 am - 12:30 am MWF Bonnell Building BR-08

Professor John Jernigan

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Text: Stewart, et al Calculus early transcendentals ed 9

The subject matter of the course (integral calculus) is difficult to master and will require your undivided attention if you are to succeed. Therefore, **cell phones must be turned off and put away for the duration of the class.** Anyone using a phone during class will be asked to put it away. Having to be told repeatedly (more than three times) will result in expulsion from the course. Phones, laptops, calculators, and notes are prohibited during exams. Lateness is rude and disruptive, and therefore not permitted.

Your syllabus, homework assignments, practice tests and quizzes are posted on the web under the address above. Please use this resource to your benefit. In particular, you may check the quizzes in advance by going to the site. There are homework assignments to hand in. These will count as a quiz towards your grade. I have also included several links you may find useful, as well as notes for each week.

There will be three tests and a final exam, as well as a short (5 question) daily quiz selected from the homework exercises. The exams come in two parts, take home and in class. The quizzes are intended as a check on your progress, and will be part of the grade. They are available *in advance* from my website. There will be absolutely no makeup quizzes given. Missing 6 or assignments will result in a failing grade. Missing an exam will result in a grade of 0 unless I am contacted within 24 hours of the exam to schedule a makeup.

Grading will be as follows: each exam is worth 20%, Final exam is 25%, total quiz score (including assignments) is 15%

Grades are 90 - 100 A; 80 - 89 B, 70 - 79 C, 60 - 69 D, < 60 F. An "I" is given if a student is currently passing, but cannot take the final due to a documented emergency. **It is your responsibility to keep track of how well you are doing in the class.** Keep all completed quizzes and exams in order to keep a record of your scores.

Please bring your textbook (in whatever form), pencil and paper to each class, as we will often do problems during the class period. We will cover a significant amount of material this semester. You are encouraged to read ahead to prepare for class, as well as complete the homework assignments.

Office hours are in the classroom BR-08. M W F 10:30 - 11:00 (i.e. before class) or M W 2:30 - 4:00, F 12:30 - 2:00

Topics include: Fundamental theorem of calculus, integration by substitution, areas and volumes, techniques of integration, arc length, improper integrals, polar coordinates and parametric equations, conic sections, sequences, infinite series, power series, convergence tests, alternating series, Taylor and Maclaurin series.

Prerequisite: MATH 171 with a grade of "C" or better.

Upon successful completion of this course, students will be able to:

1. Evaluate integrals using a variety of techniques.
2. Solve problems involving applications of integrals such as finding areas, volumes, arc length, work, etc.
3. Differentiate and integrate functions defined by parametric equations in polar form.
4. Test infinite series for convergence and represent functions using power series.

Students who believe they may need an accommodation based on the impact of a disability should contact me privately to discuss their accommodation form and specific needs as soon as possible, but preferably within the first week of class. If you need to request reasonable accommodations, but do not have an accommodation form, please contact the [Center on Disability](#) phone number 215-751-8050.

Please be mindful of the [Withdraw & Incomplete Dates](#)

Students must be familiar with and adhere to the college policy on [academic honesty](#)

You may use any resources you like for this class, online or otherwise. I recommend [wolfram-alpha](#), but some prefer [mathway](#) or [symbolab](#). [Desmos](#) is good for graphing. The number of web based math applications is almost unlimited.

While I am aware that most students take math courses only when required to do so, I sincerely hope that this course will not only be stress free, but also enjoyable and instructive. Much of this depends on you. Please ask questions, give your opinion, and participate!

## Course Schedule

### Week 1

- 5.3 The Fundamental Theorem of Calculus
- 5.4 Indefinite Integrals and the Net Change Theorem
- 5.5 The Substitution Rule

### Week 2

- 6.1 Area Between Two Curves
- 6.2 Volumes
- 6.5 Average Value of a Function

### Week 3

- 7.1 Integration by parts
- 7.2 Trigonometric Integrals
- 7.3 Trigonometric Substitutions

### Week 4

- 7.3 More Trig Subs
- 7.4 Rational Functions Partial Fractions
- 7.6 Using Tables or Wolfram

### Week 5

- 7.8 Indefinite Integrals
- 8.1 Arc Length

### Week 6

- 8.2 Areas of Surface of Revolution
- Spivak On Logarithms
- Spivak On Exponentials

### Week 7

- 11.1 Sequences

### Week 8

- 11.1 Sequences
- 11.2 Series

### Week 9

- 11.3 Integral Test
- 11.4 Comparison Test
- 11.5 Alternating Series

### Week 10

- 11.6 Absolute Convergence, Ratio and Root Test
- 11. Power Series

### Week 11

- 11.9 Representing Functions as Power Series
- 11.10 Taylor and Maclaurin Series

### Week 12

- 10.1 Parametric Curves and Equations
- 10.2 Calculus with Parametric Curves

### Week 13

- 10.3 Polar Coordinates
- 10.4 Areas and Lengths in Polar Coordinates

### Week 14

- 10.5 Conic Sections
- 10.6 Conic Sections in Polar Coordinates