

# MATH 202: Calculus II

## CRN: 12345 — Fall 20XX

### Instructor Information

*Name:* Mr. Harry Yang

*Office:* Mathematics Department

*Email:* harry.yang@college.edu

*Office Hours:* Tuesday & Thursday 1:00 PM - 3:00 PM, or by appointment

### Class Meeting Information

*Meeting Times:* Monday, Wednesday, Friday 10:00 AM - 11:15 AM

*Location:* Building A, Room 201

*Course Dates:* August 26 - December 15, 20XX

### Course Description

MATH 202: Calculus II is a continuation of Calculus I that covers advanced integration techniques, applications of the integral, infinite series, and parametric equations. This course emphasizes conceptual understanding and practical applications of calculus principles. Students will develop problem-solving skills applicable to engineering, natural sciences, economics, and other quantitative fields.

### Prerequisites

A grade of C or better in MATH 201 (Calculus I) or equivalent placement. Students should have solid proficiency in algebra, trigonometry, and differential calculus.

### Course Objectives

After successful completion of this course, students will be able to...

- Master integration techniques including integration by parts, partial fractions, and trigonometric substitution
- Apply integral calculus to solve real-world problems in physics, engineering, and other disciplines
- Understand and work with infinite series, including convergence tests and power series
- Analyze parametric and polar coordinate systems
- Communicate mathematical solutions clearly with proper notation and justification
- Use technology effectively as a tool to explore and verify calculus concepts
- Develop critical thinking skills through mathematical problem-solving

## Required Materials

You will need the following:

- **Textbook:** Calculus: Early Transcendentals (12th Edition) by Stewart, OR equivalent community college calculus textbook

## Homework and Study Expectations

Mathematics is learned by doing! You should expect 8-12 hours of work per week outside of class, including note-taking, homework completion, and exam preparation.

### Homework Guidelines:

- Assignments will be posted on the course LMS each week
- Expect 2-3 problem sets per week with varying difficulty levels
- Work must be clearly shown; answers without justification receive no credit
- Homework is graded on completion and accuracy (4 points: 2 for timeliness, 2 for correctness of selected problems)
- Late submissions accepted with 10% penalty per day, up to 3 days late

## Assessment and Grading

Student performance will be evaluated through:

- **Homework/Problem Sets** (25%): Regular practice problems graded for completion and accuracy
- **Quizzes** (20%): Short assessments (15-20 minutes) to check understanding of recent material
- **Midterm Exam** (25%): Comprehensive exam covering Units 1-3
- **Final Exam** (30%): Comprehensive exam covering all course material

All exams are closed-note and must be completed during scheduled times. Makeup exams require prior communication and valid documentation.

## Grade Scale

Grades are earned based on your demonstrated mastery of course material:

Letter Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	Below 60%

A grade of C or better is typically required to move forward to Calculus III or other advanced mathematics courses. Check your program requirements.

### Academic Integrity and AI Policy

Academic integrity is fundamental to your education and development as a critical thinker. Cheating—including copying homework, plagiarism, or unauthorized use of solution manuals—undermines your learning and devalues the work of honest students.

**Policy on AI Tools:** AI tools (such as ChatGPT) may be used as a **learning aid**, similar to a tutor or textbook. You may use these tools to:

- Generate similar practice problems
- Understand steps in a solution process
- Check your work and explain discrepancies

#### **You must NOT:**

- Submit AI-generated solutions as your own work
- Copy answers directly without understanding
- Use AI during exams or quizzes

### Getting Help

Be proactive about your success! If you struggle with any concepts, multiple resources are available:

1. **Instructor Office Hours:** My primary responsibility is your success. Email or visit during office hours.
2. **Math Tutoring Center:** Free tutoring available in Building B, Room 105. Hours posted on college website.
3. **Online Resources (Free):**
  - Paul's Online Math Notes (detailed explanations and examples)
  - YouTube channels: The Organic Chemistry Tutor, 3Blue1Brown's Essence of Calculus (conceptual visualizations)
4. **Study Groups:** Form a study group with classmates for peer learning

### Tips for Success in Calculus II

To thrive in this course and future mathematics courses:

- **Attend every class.** Missing even one class puts you at a disadvantage.
- **Do not procrastinate.** Start homework early and ask questions before the deadline.
- **Master one concept at a time.** Don't move forward until you understand the foundations.
- **Ask questions!** There are no silly questions in mathematics.

- **Form a study group.** Working with peers helps you understand material deeply and reinforces your own knowledge.
- **Practice, practice, practice!** Reading notes is passive; doing problems is active learning. Work through new problems carefully.
- **Check your work.** When finished with a problem, verify your answer. If wrong, examine what misunderstanding occurred and how to avoid it in the future. If correct, think about whether there was a faster method and whether your solution was clear and easy to follow.
- **Connect concepts.** Think about how new topics relate to previous material and to real-world applications.

### Course Topics and Schedule

The following is an overview of major topics covered. A detailed week-by-week schedule will be provided on the course LMS.

- **Integration Techniques**  
Integration by parts, trigonometric integrals, trigonometric substitution, partial fraction decomposition
- **Applications of Integration**  
Area between curves, volumes of solids (disk/washer/shell methods), arc length, surface area, work and force
- **Differential Equations**  
Separable differential equations, exponential growth/decay, slope fields, Euler's method
- **Infinite Series**  
Sequences and series, convergence tests, power series, Taylor and Maclaurin series, applications
- **Parametric and Polar Coordinates**  
Parametric equations and calculus, polar coordinates, calculus in polar form

### Accessibility and Support Services

If you have disabilities or require academic accommodations, contact the Disability Services Office in Student Services. I am committed to creating an accessible learning environment. Please communicate with me early in the semester.

*Mathematics is a powerful tool for understanding the world. With dedication and effort, you can master Calculus II and build confidence in your mathematical abilities. Let's have a great semester!*