暨南大學
JINAN UNIVERSITY

0701M230

Calculus II

Instructor: TBA

E-mail: TBA

Office Hours: by appointment on Zoom

Contact Hours: 60 (50 minutes each)

Credits: 4

Course Description

Techniques of integration, applications of integration, sequences and series, power series and Taylor series, parametric equations and polar coordinates.

Required Textbook(s)

Ron Larson, *Calculus*, 10 ed., ISBN: 1285057090

Prerequisites

We assume students are familiar with the standard content of a calculus I course for scientists and engineers. This includes the study of limits, derivatives, optimization of functions of a single variable, using derivatives to sketch graphs, antiderivatives and the method of substitution, definite integrals and Riemann sums, and the fundamental theorem of calculus. Moreover, they should have studied this material in the context of algebraic, exponential, logarithmic, and trigonometric functions.

Course Goals

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

- Demonstrate proficiency in differentiating and integrating inverse trigonometric functions by applying derivative and integral formulas; simplify expressions through substitution and algebraic manipulation; and solve application-based problems involving these functions.
- Utilize definite integrals to address geometric and physical applications, including determining areas between curves, volumes of solids of revolution via disk and shell methods, arc lengths, and surface areas of revolution; calculate work, moments, centers of mass, and centroids for planar regions.
- Employ advanced integration techniques such as integration by parts, trigonometric substitution, and partial fraction decomposition; evaluate improper integrals and apply L'Hôpital's Rule to resolve indeterminate forms; and assess convergence in the context of integral behavior.
- Analyze the convergence of sequences and series using established tests—Integral, Comparison, Alternating Series, Ratio, and Root Tests; construct Taylor polynomials for approximation purposes; and represent functions as power series, Taylor series, or Maclaurin series.
- Model and interpret curves represented in parametric and polar forms; describe motion and geometric shapes using parametric equations and polar coordinates; compute derivatives, areas, and arc lengths in these systems; and relate Cartesian, parametric, and polar representations.

Course Outline

Please note that the outline is meant to give an overview of the major concepts in this course. Changes may occur as needed to aid in the student`s development.

Module 1

- 5.6. Inverse Trigonometric Functions: Differentiation
- 5.7. Inverse Trigonometric Functions: Integration
- 7.1. Area of a Region Between Two Curves
- **Homework 1**
- **Quiz 1**

Module 2

- 7.2. Volume: The Disk Method
- 7.3. Volume: The Shell Method
- **Homework 2**
- **Quiz 2**

Module 3

- 7.4. Arc Length and Surfaces of Revolution
- 7.5. Work
- 7.6. Moments, Centers of Mass, and Centroids
- 8.1. Basic Integration Rules
- **Homework 3**
- **Quiz 3**

Module 4

- 8.2. Integration by Parts
- 8.3. Trigonometric Integrals
- 8.4. Trigonometric Substitution
- **Homework 4**
- **Quiz 4**
- **Exam 1**

Module 5

- 8.5. Partial Fractions
- 8.7. Indeterminate Forms and L’Hôpital’s Rule
- 8.8. Improper Integrals
- **Homework 5**
- **Quiz 5**

Module 6

- 9.1. Sequences
- 9.2. Series and Convergence

- 9.3. The Integral Test and p-Series
- **Homework 6**
- **Quiz 6**

Module 7

- 9.4. Comparisons of Series
- 9.5. Alternating Series
- 9.6. The Ratio and Root Tests
- 9.7. Taylor Polynomials and Approximations
- **Homework 7**
- **Quiz 7**

Module 8

- 9.8. Power Series
- 9.9. Representation of Functions by Power Series
- 9.10. Taylor and Maclaurin Series
- **Homework 8**
- **Quiz 8**
- **Exam 2**

Module 9

- 10.2. Plane Curves and Parametric Equations
- 10.3. Parametric Equations and Calculus
- 10.4. Polar Coordinates and Polar Graphs
- 10.5. Area and Arc Length in Polar Coordinates
- **Homework 9**
- **Quiz 9**
- **Final Exam**

Grading Policy

Your grade in this course will be determined by your performance in the following categories:

Homework	15 %
Quizzes (Top 8 out of 9)	20 %
Exams	40 %
Final Exam	25 %
Total	**100%**

Since a quiz is being dropped, there will be absolutely no rounding of your final grade. For each assignment, you have two days from the day the grade is posted to the course site to challenge its grading. Failure to challenge the grading in this time frame will result in the grade being final. You may track your running point total throughout the term via our course site. Please be aware, however, that the course grade you see on the site will reflect only assignments and activities you have already completed and that your professor has graded.

Grading Scale

The instructor will use the grading system as applied by JNU:

Definition	**Letter Grade**	**Score**
Excellent	A	90~100
Good	B	80~89
Satisfactory	C	70~79
Poor	D	60~69
Failed	E	Below 60

Academic Integrity

As members of the Jinan University academic community, students are expected to be honest in all of their academic coursework and activities. Academic dishonesty, includes (but is not limited to) cheating on assignments or examinations; plagiarizing, i.e., misrepresenting as one's own work any work done by another; submitting the same paper, or a substantially similar paper, to meet the requirements of more than one

course without the approval and consent of the instructors concerned; or sabotaging other students' work within these general definitions. Instructors, however, determine what constitutes academic misconduct in the courses they teach. Students found guilty of academic misconduct in any portion of the academic work face penalties that range from the lowering of their course grade to awarding a grade of E for the entire course.