The Beijing Center

北 京 中 国 学 中 心

Fall 2020
TBC 2620 Multivariable Calculus

Credit Hours: 3.0
Class Times and Location: TBA
Instructor: TBA
E-mail: academics@thebeijingcenter.org

Course Description

This course will cover selected topic from differential and integral calculus of several variables. Topics include vectors in three dimensions, functions of several variables, partial derivatives, Lagrange multipliers, multiple integrals, line integrals, Green's Theorem surface integrals, Stokes' theorem, and applications.

Learning Outcome

On successful completion of this course (i.e. by *passing* this course), a student will be able to

1. Perform calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
2. Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
3. Find extrema and tangent planes.
4. Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, the Divergence Theorem, and Stokes' Theorem.
5. Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

Textbook

Calculus, Early Transcendentals, 8th Ed. by James Stewart. (ISBN: 978-1285741550)

Course Requirements

1. Calculators

Students must have a graphing calculator. The TI-84 plus (or TI-84, TI-83+, TI-83) is recommended for the students, but any graphing calculator that has a "table" feature is acceptable. (The old TI-81 and TI-85 models do not have a table feature!). Any calculators that can do symbolic mathematics such as TI-89 or HP-49 are not allowed on exams and quizzes.

2. Attendance Policy

Students are expected to attend class regularly and participate in in-class activities. Although attendance will not directly affect the final grade, it is the student's responsibility to obtain missed announcements, notes, and assignments from a classmate

or office hours. Absence is not an excuse to miss work unless prior permission or documented emergencies exist.

3. Grading

Your grade will be based upon the total points earned, according to the following:

(a) Class Participation and Academic Etiquette (5%)
(b) Quizzes (20%)
(c) Midterm exam 1 (20%)
(d) Midterm exam 2 (20%)
(e) Final exam (35%)

90%-100%: A-, A
80%-89%: B-, B, B+
70%-79%: C-, C. C+
60%-69%: D, D+
Less than 60%: F

4. Academic Honesty Statement

Please click the following link to see The Beijing Center's policy on Academic Integrity: http://thebeijingcenter.org/academic-integrity

Course Schedule

Topics to be covered:
Week 1-2:
Chapter 12
Vectors in 3D, dot product, cross product, lines and planes

Week 3-4:
Chapter 13
Vector Functions, space curves, derivatives and integral of vector functions, arc length and curvature

Week 5-6
Chapter 14
Functions of several variables, partial derivatives, directional derivatives, gradient vectors, maxima and minima values, Lagrange multipliers

Week 7 Midterm

Week 8-10
Chapter 15
Double integrals and applications, triple integrals and applications, change of variables in multiple integrals

Week 11-13
Chapter 16
Vector fields, line integral, Green's Theorem, curl and divergence, Stokes' Theorem, divergence theorem

Week 14 Final Exam