Syllabus

Course No.	1900818W	College		Science	Dept.	Mathematics
Teacher	Juan Zhang					
Time	2023.06.12-2023.07.14					
Course Name	**English**	Multivariable Calculus				
	Chinese	多变量微积分				

Course credit hours	**Total**	**Theory**	**Office Hour or Practice**	**Credits**
	70	60	10	4.0

Course description：

Introduction of vectors and the geometry of space, vector-valued functions, partial derivatives, multiple integration, vector calculus etc.

Requirements for courses; ability and knowledge in advance

The prerequisites are Calculus I and Calculus II.

Course structure explanation:

Make clear the necessary parts, optional parts, distribution of hours. Courses with experiments or practice are expected to explain credit hours needed, content, scheme and functions.

Week	Content
1	1. Introduction and Three-Dimensional Coordinate Systems
	2. Vectors and The Dot Product
	3. The Cross Product and Equations of Lines and Planes
	4. Cylinders and Quadric Surfaces and Vector Functions and Space Curves
	5. Project
2	1. Derivatives and Integrals of Vector Functions and Arc Length and Curvature
	2. Motion in Space: Velocity，Acceleration and Functions of Several Variables;
	3. Limits and Continuity，and Partial Derivatives
	4. Tangent Planes and Linear Approximations.

3	1. The Chain Rule and Directional Derivatives and the Gradient 2. Directional Derivatives and the Gradient Vector, and Maximum and Minimum Values 3. Lagrange Multipliers and Double Integrals over Rectangles and General Regions 4. Double Integrals in Polar Coordinates players. Mid-term Exam
4	1. Applications of Double Integrals and Double Integrals in Polar Coordinates 2. Applications of Double Integrals and Triple Integrals in Cylindrical and Spherical Coordinates 3. Change of Variables in Multiple Integrals and Vector Fields 4. Line Integrals
5	1. Green's Theorem and Curl, and Divergence 2. Parametric Surfaces and Their Areas, andSurface Integrals 3. Parametric Surfaces and Their Areas, and Surface Integrals 4. Stokes' Theorem and The Divergence Theorem. Final Exam

Teaching methods (Lectures, practice, etc.)

Lectures and self-study

Forms of evaluation and requirements

Structure of the final grade(including presence, class performance,), focus of exam, forms of exam(test, interview, final report, etc)

Homework and final exam

	Name	Publisher	Author	Year	Price
Textbook	Stewart, Early Transcendental Calculus	Brooks Cole; 8 edition	James Stewart	2015	
College					