Math 118 Introduction to Functions of Several Variables

Summer II 2020—June 29th to July 31st, 2019

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**Instructor:** Ning Jia  
**Office:** TBD  
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**Phone:** (617) 710-6857

**Class Meetings:** MW 1:00-4:15pm  
**Location:** TBD

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**Course Pages:** Please check our Canvas page regularly for all announcements, assignments, supplementary materials and schedule.

**Office Hours (tentative):**
- Wednesday: 4:15-5:15pm (on-campus), Friday: 10-11am (online), Sunday: 7-8pm (online)
- By appointment.

**Textbooks:**
- [Kuttler, A First Course in Linear Algebra](#) (you should not purchase this textbook)
- McCallum, et. al., Calculus: Multivariable, Wiley, 7th Edition (Please purchase it ASAP if you have not done it).

**Course Description:** A combination of linear algebra and differential calculus of several variables. Matrix representation of linear equations, Gauss elimination, vector spaces, independence, basis and dimension, projections, least squares approximation, and orthogonality. Three-dimensional geometry, functions of two and three variables, level curves and surfaces, partial derivatives, maxima and minima, and optimization. Intended for students in the social sciences, especially Economics.

**Prerequisites:** Math 112 or equivalent. Please seek instructor consent if you have not taken Math 112 at Yale University before.

**Brief Course Outline:**
- Systems of Linear Equations
- Matrix Arithmetic
- LU Factorization
- Vectors and Algebra in \( \mathbb{R}^n \)
- Functions of Several Variables
- Differentiation of Functions of Several Variables
- Optimization of Functions of Several Variables
Grading Policy:

In-Class Quizzes ......................................................... 30%
Homework .............................................................. 40%
Final Exam ............................................................... 30%

In-Class Quizzes: We will have 10 meeting times, and will have a 20-25 minute quiz at the beginning of each of the first 9 classes. The first quiz is for information purpose only and will not count toward your grade. Each quiz is worth 3.75% of your total grade, for the total of 30%.

You will receive a code at the beginning of class to access the quiz in Canvas, and then you will be required to submit your quiz through Canvas after you are done. You will need to provide documentation to support your absence to class, if you want to make up the quiz.

Homework: There will be 9 homework assignments, due either Thursday or Sunday nights at 11:59pm. Homework must be submitted through Canvas following instructions. No late submissions accepted without proper supportive documentation. Each homework is worth 4.44% of your total grade, for the total of 40%.

Final Exam: Final exam will take place on July 29th during regular class time: 1:00-4:15pm.