

MATHEMATICAL ECONOMICS, ECON 471  
Department of Economics  
St. Francis Xavier University  
Fall 2020

**Instructor:** Teng Wah LEO

**Time Blocks and Location:** U1/U2 (Monday 8:15 a.m.–9:30 a.m. & Thursday 9:45 a.m.–11 a.m.), Mulroney Hall, MULH3022

**Office Hours:** Tuesday, 10 a.m.–2 p.m.; Wednesday, 10 a.m.–2 p.m.

**Objective:** The course is designed to provide a mathematical foundation for Advanced Microeconomics and Macroeconomics, and future graduate work. Mathematical techniques covered includes advanced calculus, matrix algebra, ordinary differential equations, optimal control & dynamic programming. These techniques will be applied to both micro- and macro-economic models. **Prerequisites:** MATH 111, MATH 112.

**Evaluation:**

1. 40% – 4 × Assignments
2. 30% – Mid Term Examination/Take–Home Essay
3. 30% – Final Examination/Take–Home Essay

**Required Text:**

None.

**Supplementary Reading:**

Carl P. Simon & Lawrence Blume. *Mathematics for Economists*, 1st edition, W.W. Norton & Company, 1994.

Kevin Wainwright & Alpha C Chiang. *Fundamental Methods of Mathematical Economics*, 4th edition, McGraw-Hill, 2004.

Alpha C Chiang. *Elements of Dynamic Optimization*, 1st Edition, McGraw-Hill, 1992.

**Course Outline:**

1. Revision of Calculus
2. Revision of Linear Algebra
3. Euclidean Spaces & Independence
4. Limits & Open Sets
5. Advanced Linear Algebra
6. Optimization
7. Ordinary Differential Equation & Optimal Control Theory
8. Dynamic Programming (Course Notes)