Mathematical Economics, ECON 471

Department of Economics

St. Francis Xavier University

Fall 2018

Instructor: Teng Wah LEO

Time Blocks and Location: X1/X2 (Tuesday & Thursday, 2:15 p.m. - 3:30 p.m.), AX23A

Office Hours: Monday, 1 p.m. - 4 p.m.; Wednesday, 10 a.m. - 4 p.m.; Friday, 11:15 a.m. to 12:15 a.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
3. 30% − Final Examination

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, Chapters 1−5 & 13−15
2. Revision of Linear Algebra, Chapters 6−9
3. Euclidean Spaces & Independence, Chapters 10−11
4. Limits & Open Sets, Chapter 12
5. Advanced Linear Algebra, Chapters 27−28
6. Optimization, Chapters 16−22
7. Ordinary Differential Equation & Optimal Control Theory, Chapters 24−25
8. Dynamic Programming (Course Notes)

Note: All topics will conclude with their pertinent applications when sufficient skills has been accumulated.