Instructor: CHEN Yi-Chun, TEL: 6516-3992, Office: AS2 0528, email: ecsycc@nus.edu.sg

Time and Location:
- week 1: Fri 1000-1300 AS2 0312
- week 2: Mon 1200-1500 AS2 0312; Wed 1830-2130 AS1 0201
- week 3: Mon 1400-1700 AS2 0312; Wed 1830-2130 AS1 0201; Fri AS2 0312 1000-1300
- week 7 – : Wed 1830-2130 at AS1 0201

Office Hours: by appointment

Textbook:
- Principles of Mathematical Analysis, 3rd edition, Walter Rudin (1976)
- A First Course in Optimization Theory, Rungarajan Sundaram (1996)

Supplementary readings:

Outline:
The purpose of this course is to provide MA/PhD students in economics with the essential mathematical tools for their program. The course covers topics in basic real analysis and optimization. Aside from providing mathematical tools, one of the primary aims of this course is to develop the level of mathematical sophistication necessary to conduct research in modern economics. The course will therefore emphasize logical clarity and mathematical rigor, along with the ability to follow and construct mathematical proofs.

Grading:
Weekly assignments (20%, in groups, 3–5 persons, and by effort), one midterm (30%), and one final (50%). Exams are in class, open-whatever-you-want, and without communication. Final is comprehensive.

Exam Date and Time: midterm is 1830 on September 28 and final is 1300 on November 29.

Topics:
1. Logic, Sets, and Real Numbers
2. Mappings and Vector Spaces
3. Norms, Metrics, and Topology
4. Sequences, Subsequences, and Compactness
5. Continuity
   Midterm
6. Convexity
7. Differentiation
8. Constrained Optimization
9. Measure and Integration