Allievi Program, Master in Economics, and Ph.D. in Economics

MATHEMATICS FOR ECONOMICS
Fall 2023

Instructor: Pierpaolo De Blasi

Contact Information

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Course Description

The purpose of this course is to provide basic mathematical tools used in macro and microe-conomics. Knowledge of elementary calculus is assumed. The main topic is linear algebra, see below for a detailed course outline. Each topic is complemented with a problem set; some of the exercises will be solved in class; solutions will be available via a Google Drive Folder in due time. It is highly recommended to try to solve the exercises prior to looking at the solutions. Attendance to classes is *mandatory*.

Schedule

The course will take place during the last week of August and the first two weeks of September, 10 classes of 3 hours each, for a total of 30 hours.

Exam

There will be a final examination during the third week of September, consisting of a series of problems to be solved in 3 hours time. No lecture material will be allowed (closed-book exam).

Textbooks

The main texts for the course are:

(SB) Simon, C. P. and Blum L. (1994). *Mathematics for Economists*. W. W. Norton & Company.

(S) Strang, G. (2009). *Introduction to Linear Algebra* (4 edn). Wellesley Cambridge Press.

   In addition, I will post in due time the lecture notes via a Google Drive Folder. The shareable link will be provided via email. They are for internal use only.

Course Outline

1. Elements of vector and matrix algebra	**(S)**	Chp 1–2
	(SB)	10.1–10.4, 8.1–8.4
2. System of linear equations	**(S)**	Chp 2
	(SB)	7.1–7.3, 8.7
3. Vector spaces, linear independence and basis	**(S)**	Chp 3, Chp 4
	(SB)	11.1–11.3, 27.1–27.2, 27.6
4. Rank and linear mappings	**(S)**	Chp 3, Chp 7
	(SB)	7.4, 13.3, 27.3–27.5
5. Orthogonality	**(S)**	Chp 4
6. Determinant	**(S)**	Chp 5
	(SB)	9.1–9.2, 26.1–26.3
7. Eigenvectors and eigenvalues	**(S)**	Chp 6
	(SB)	16.1–16.2, 23.1–23.3, 23.7–27.8