

Applied Linear Algebra

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Timetable: 16 hours. Class meets every Tuesday and Thursday from 10:30 to 12:30. First lecture on Tuesday, September 13, 2011. Room Oe (Dept. of Information Engineering, Via Gradenigo 6/a).

Course requirements: A good working knowledge of basic notions of linear algebra, as e.g. presented in [1].

Examination and grading: Grading is based on homeworks or a written examination or both.

Aim: We study concepts and techniques of linear algebra, which are important for applications and computational issues. A wide range of exercises and problems will be presented such that a practical knowledge of tools and methods of linear algebra can be acquired.

Course contents:

- *Kronecker products*
- *Sylvester and Lyapunov matrix equations*
- *Least squares problems and singular value decomposition*
- *Computational methods*
- *Perturbation theory*

References:

- [1] E. Gregorio and L. Salce. *Algebra Lineare*. Edizioni Libreria Progetto, Padova, 2005.
- [2] A.J. Laub. *Matrix Analysis for Scientists and Engineers*, SIAM, Philadelphia, 2005,
- [3] C.D. Meyer. *Matrix Analysis and Applied Linear Algebra*, SIAM, Philadelphia, 2000.
- [4] L. N. Trefethen and D. Bau *Numerical Linear Algebra*. SIAM, Philadelphia, 2000.