



**UNIVERSIDADE FEDERAL DE SANTA CATARINA  
CENTRO DE CIÊNCIAS FÍSICAS E MATEMÁTICAS  
PÓS-GRADUAÇÃO EM MATEMÁTICA PURA E APLICADA**

**MTM510025 Computational Linear Algebra II**

Pre-requisite: MTM410024 Computational Linear Algebra

Weekly lesson hours: 06h

**Discipline syllabus:** The problem of non-symmetric and symmetric eigenvalues: QR, Arnoldi and Lanczos methods. Disturbance theory for eigenvalues, singular values and invariant subspaces. Krylov subspaces methods for linear systems and least squares problems: Methods LSQR, CGLS, GMRES, MINRES.

**BIBLIOGRAPHIC REFERENCES**

*Text book:*

1. GOLUB, Gene H.; VAN LOAN, Charles F. Matrix computations. 3rd. ed. Baltimore: Johns Hopkins University Press, 1996.
2. DEMMEL, James W.; Applied Numerical Linear Algebra. Philadelphia: SIAM, 1997.
3. TREFETHEN, Lloyd N.; BAU, David. Numerical Linear Algebra. Philadelphia: SIAM, 1997.

**COMPLEMENTARY BIBLIOGRAPHY**

1. BHATIA, Rajendra. Matrix analysis. New York: Springer, 1996.
2. GREENBAUM, Anne; Iterative Methods for Solving Linear Systems. Philadelphia: SIAM, 1997.
3. HORN, Roger A.; JOHNSON, Charles R. Matrix analysis. Cambridge: Cambridge University Press, 1990.
4. MEYER, Carl D. Matrix analysis and applied linear algebra. SIAM. Philadelphia: 2000.
5. Börk, Ake, Numerical Methods for Least Squares Problems, SIAM, Philadelphia, 1996.
6. WATKINS, David S. Fundamentals of matrix computations. New York: J. Wiley, 1991.