



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

MTM510013 Numerical Analysis II

Pre-requisite: MTM410028 Numerical Analysis I, MTM410029 Functional Analysis

Weekly lesson hours: 06h

Discipline syllabus: Elliptical problems. Galerkin method. Error analysis. Finite elements, definitions and examples. Principles of finite element approximation: meshes, approximation spaces and interpolants, inverse estimates. Generation of mesh. Quadraturas and assembly. Examples of approximation of elliptical problems.

BIBLIOGRAPHIC REFERENCES

Text book:

1. A.Ern, J.-L. Guermond. Theory and practice of finite elements Applied Mathematical Sciences, 159, Springer (2004).

COMPLEMENTARY BIBLIOGRAPHY

1. Tomas J.W. Thomas Numerical partial differential equations Texts in Applied Mathematics, 33, Springer (1999).
2. C. Johnson, Numerical solution of the partial differential equations by the finite element method, Cambridge Univ. Press, Cambridge (1987).
3. S.C.Brenner and L.R. Scott, The mathematical theory of finite element methods, Springer, New York (1994)