Lecture Structure
1 Preliminaries (Chapter 5 in [11]).
   − Sobolev spaces.
   − Inequalities.
2 The finite element method for one spatial dimension.
3 The finite element for the Poisson equation (multidimensional case).
4 The finite element method for linear elliptic boundary value problems of second order.
5 The mixed finite element method. The mixed hybrid finite element method.
6 The finite element method for nonlinear elliptic problems.
7 The finite element method for linear parabolic problems. Space-time finite elements.
8 Domain decomposition methods.

I will mainly use the books [12] and [3, 10].

References


