Applied Functional Analysis and Machine Learning

Prof. Gianluigi Pillonetto

Dept. of Information Engineering, University of Padova
Email: giapi@dei.unipd.it

Timetable: 28 hrs (2 two-hours lectures per week): Classes on Tuesday and Thursday, 10:30 - 12:30. First lecture on Thursday November 24th, 2016. Sala Riunioni 318 DEI/G 3-rd oor, via Gradenigo 6).

Course requirements:
1. The classical theory of functions of real variable: limits and continuity, differentiation and Riemann integration, infinite series and uniform convergence.
2. The arithmetic of complex numbers and the basic properties of the complex exponential function.
3. Some elementary set theory.

All the necessary material can be found in W. Rudin’s book Principles of Mathematical Analysis (3rd ed., McGraw-Hill, 1976). A summary of the relevant facts will be given in the first lecture.

Examination and grading: Homework assignments and final test.

Aim: The course is intended to give a survey of the basic aspects of functional analysis, machine learning, regularization theory and inverse problems.

Course contents:
tency/generalization and relationship with Vapnik’s theory and the concept of $V_\gamma$ di-
ension. Support vector regression and classification.

References: