Spring 2015

Mat-1.3354 An introduction to Harmonic Analysis (5-10 credits)

This course gives an intRoduction to modern methods in the theory of Harmonic Analysis. The practical matters related to the course will be discussed in the first lecture. For more information, see Noppa.

Contents:

- The maximal function.
- The A_p theory of weights.
- Potential operators.
- The BMO space and the John-Nirenberg theorem.
- Singular Integral Operators.

There are no particular prerequisites for this course, but basic knowledge of measure and integration theory, real analysis and functional analysis may be useful. However, the required facts will be recalled whenever needed.

Lectures:

Tuesdays: 14.04.2015 klo 10:15 - 12:00 - 19.05.2015 klo 10:15 - 12:00, Room M3

Frid ays 17.04.2015 klo 10:15 - 12:00 - 22.05.2015 klo 10:15 - 12:00 Room M3

Instructor: Carlos Perez (carlos.perezmo@ehu.es)

The grading is based on the homework:

Solved Problems	Grade
90%	5
80%	4
70%	3
60%	2
50%	1

Basic bibliography:

M. A. Pinsky: **Introduction to Fourier Analysis and Wavelets**, Ed. Brooks/Cole, 2002.

J. Duoandikoetxea, **Fourier Analysis**, American Math. Soc., Grad. Stud. Math. **29**, Providence, RI, 2000.

J. García-Cuerva and J.L. Rubio de Francia, **Weighted Norm Inequalities and Related Topics**, North Holland Math. Studies 116, North Holland, Amsterdam, 1985.

L. Grafakos, **Classical Fourier Analysis**, Springer-Verlag, Graduate Texts in Mathematics **249**, Second Edition 2008.

Complementary Bibliography:

F. Linares, G. Ponce **Introduction to Nonlinear Dispersive Equations**, Spinger Universitext, 2009.

G.B. Folland: **Introduction to Partial Differential Equations**. Princeton Univ. Press, Second Edition, 1995.

Lecture notes, I. Parissis.

L. Grafakos, **Modern Fourier Analysis**, Springer-Verlag, Graduate Texts in Mathematics **249**, Second Edition 2008.

E. Stein, **Harmonic analysis: real-variable methods, orthogonality, and oscillatory integrals**, University Press, Princeton, 1995.

E. Stein, **Singular integrals and differentiability properties of functions**, University Press, Princeton, 1970.