| Program | Level | Third cycle | | |
| | Name of the program | SEE Doctoral Studies in Mathematical Science | | |

COURSE				
Course title	**HARMONIC ANALYSIS**			
Course code	Semester	Course status	ECTS	Contact hours
PMAT 660	II	Elective course	10	30
Lecturer				
Course Goals	Method of harmonic analysis has a central role in many areas of mathematical research. Deep connections between geometric function theory, partial differential equations and analysis on the Heisenberg group provide an excellent sample ground. This course is intended to acquaint its participants with the tools of harmonic analysis suitable for study of boundary value problems for geometrically interesting differential operators.			

COURSE CONTENT

- Hilbert transform
- Pseudodifferential operators
- Fractional and singular integrals
- Convexity and pseudoconvexity
- Complex integral operators
- Hardy spaces
- Heisenberg group
- Analysis on Heisenberg group

LITERATURE

[1] F. M. Christ, Lectures on Singular Integrals, American Mathematical Society 1990. L. Grafakos, Modern Fourier analysis, Springer 2009.
[2] S. G. Krantz, Explorations in harmonic analysis. Birkhäuser 2009.
[3] C. Sogge, Fourier integrals in classical analysis. Cambridge University Press 1993.
[4] E.M. Stein, Harmonic Analysis: Real-Variable Methods, Orthogonality and Oscillatory Integrals, Princeton University Press 1993.

GRADING			REMARKS	
Criterion	Maximum points	Minimum points		
Homework	20	11		
Project	40	22		
Final exam	40	22		
T o t a l	100	55		