

Program	Level		Second cycle				
	Name of the program		Applied Mathematics				
<b>COURSE</b>							
Course title	<b>Fourier Transform and Wavelets</b>						
Course code	Semester	Course status	ECTS	Contact	hours		
				(L+AE+LE)			
PMAT 425	I	Mandatory course	8	3+2+0			
Lecturer							
Course Goals	Fourier and Wavelet transforms are important tools which are applied to solve many problems in various fields, such as mathematical physics, signal theory, tomography, and the like. The main goal of the course is to provide a theoretical basis for understanding and applying these transforms.						
Learning Outcomes	After successful completion of the course, the student is expected to: <ul style="list-style-type: none"> <li>- understand the basic concepts and techniques of Fourier and Wavelet analysis</li> <li>- be able to apply Fourier, Fast Fourier and Wavelet transforms to solve specific problems</li> <li>- be able to use some software to manipulate the transforms which are the subject of study</li> </ul>						
<b>COURSE CONTENT</b>							
<ul style="list-style-type: none"> <li>- Normed and Hilbert spaces</li> <li>- Approximation of functions</li> <li>- Fourier series expansions of functions</li> <li>- Fourier transform</li> <li>- Wavelet transform</li> <li>- Discrete and Fast Fourier transform</li> <li>- Wavelets</li> <li>- Multiresolution analysis</li> <li>- Software packages for wavelet manipulation</li> </ul>							
<b>LITERATURE</b>							
[1] G. Bachman, L. Narici, E. Beckenstein: Fourier and Wavelet Analysis, Springer-Verlag, 2000. [2] A. Boggess, F.J. Narcowich: A First Course in Wavelets with Fourier Analysis (2nd edition), Wiley, 2009. [3] C. K. Chui, Wavelets: A Mathematical Tool for Signal Analysis, Society for Industrial and applied Mathematics, 1997. [4] I. Daubechies, Ten lectures on wavelets, SIAM, Philadelphia, PA, 1992. [5] D. Radunović: Talasići (wavelets), Akademska Misao, Beograd, 2005.							
<b>STUDENT WORKLOAD (hours in a semester)</b>							
Lectures	45	Exercises	30	Individual work	125	T o t a l	200
<b>GRADING</b>				<b>REMARKS</b>			
Criterion	Maximum points	Minimum points					
Midterm exams	40	20					
Project	20	10					
Final exam	40	20					
T o t a l	100	55					