

Program	Level		First cycle				
	Name of the program		Pure Mathematics, Applied Mathematics				
<b>COURSE</b>							
Course title	<b>Introduction to Functional Analysis</b>						
Course code	Semester	Course status	ECTS	Contact (L+AE+LE)	hours		
PMAT 370	VI	Mandatory course	5	2+2+0			
Lecturer							
Course Goals	The content of this course is required for a complete understanding of the theory of ordinary and partial differential equations, real and complex analysis.						
Learning Outcomes	This course offers both detailed comprehension of elements of functional analysis and an advanced mastering of the generally used techniques in this discipline.						
<b>COURSE CONTENT</b>							
<ul style="list-style-type: none"> <li>- Topological and metric spaces.</li> <li>- Normed and Banach spaces.</li> <li>- Linear operators.</li> <li>- Hahn-Banach theorem.</li> <li>- Open mapping theorem.</li> <li>- Closed graph theorem.</li> <li>- Banach-Steinhaus theorem. Examples</li> <li>- Reflexivity</li> <li>- Adoint operator.</li> <li>- Totally continuous operators.</li> <li>- Invariant subspaces.</li> <li>- Hilbert spaces. Elementary properties. Examples.</li> <li>- Orthogonality.</li> </ul>							
<b>LITERATURE</b>							
[1] Bela Bollobas, Linear Analysis, An Introductory course, Cambridge University Press, 1990.							
[2] Erwin Kreyszig, Introductory functional analysis with applications, New York etc.: John Wiley & Sons. XIV							
<b>STUDENT WORKLOAD (hours in a semester)</b>							
Lectures	30	Exercises	30	Individual work	65	T o t a l	125
<b>GRADING</b>				<b>REMARKS</b>			
Criterion	Maximum points	Minimum points					
Midterm exams	60	30					
Final exam	40	25					
T o t a l	100	55					