Program	Level	Second cycle			
	Name of the program	Pure Mathematics			
COURSE					
Course title	**Selected Topics in Number Theory**				
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)	
PMAT 540	III	Elective course	7	3+2+0	
Lecturer					
Course Goals	The main goal of the course is to develop some of the advanced topics in the field of number theory according to the interest of students and approved by the teacher.				
Learning Outcomes	After completing this course, students should demonstrate competency in the following skills: - Improve knowledge of number theory; - Acquire some knowledge required to be able to do some scientific research in number theory independently.				

COURSE CONTENT

The content of this course is not fixed a priori. The teacher will fix the topics according to the student's interests. Possible topics include elliptic curves, modular forms, Dedekind sums, additive problems in number theory, especially the Hardy–Littlewood circle method, sieves methods, Selberg class, and its properties, etc.

LITERATURE

Bibliography items depend on the selected topics by the teacher and in accordance to the student's interest. Basically, it may include:

[1] F. Diamond, J. Shurman, A First Course in Modular Forms, Graduate Texts in Mathematics, Springer Verlag, 2007.

[2] J. H. Bruinier, G. Van der Geer, G. Harder, D. Zagier, The 1-2-3- of Modular Forms: Lectures at Summer School in Nordfjordeid, Norway, Springer Verlag, 2008.

[3] J. H. Silverman, The Arithmetic of Elliptic Curves, 2nd ed., Graduate Texts in Mathematics, Springer Verlag, 2009.

[4] H. Rademacher, E. Grosswald, Dedekind Sums, The Carus Mathematical Monographs 16, 1972.

[5] M. B. Nathanson, Additive Number Theory The Classical Bases, Graduate Texts in Mathematics, Springer Verlag, 1996.

[6] J. B. Friedlander, D. R. Heath-Brown, H. Iwaniec, J. Kaczorowski, Analytic Number Theory, Cetraro, Italy 2002, Lecture Notes in Mathematics 1891, Springer Verlag, 2006.

[7] H. Iwaniec, E. Kowalski, Analytic Number Theory, AMS Colloquium Publications vol. 53, Providence, Rhode Island, 2004.

STUDENT WORKLOAD (hours in a semester)

Lectures	45	Exercises	30	Individual work	100	T o t a l	175

GRADING			**REMARKS**
Criterion	Maximum points	Minimum points	
Midterm exams			
Project			
Final exam			
T o t a l	100	55	