Program	Level	Second cycle			
	Name of the program	Applied Mathematics, Pure Mathematics			
COURSE					
Course title	**Mathematical Physics**				
Course code	Semester	Course status		ECTS	Contact hours (L+AE+LE)
AMAT 530	III	Elective course		7	3+2+0
Lecturer					
Course Goals	Developing familiarity with the application of appropriate mathematical apparatus (differential calculus, analytical geometry, solving differential equations, groups and representations) for solving some physical problems and their interpretation.				
Learning Outcomes	Recognition and application of appropriate methods to solve some physical problems				

COURSE CONTENT

- Classical mechanics: Kinematics; Newton's laws; Galilean transformations; Conservation laws; Analysis of planetary motion; Systems of particles; Rigid body motion; Systems with connections; Lagrange's formalism;
- Principle of least action; Hamiltonian formalism;
- Electromagnetic field theory: Maxwell's equations; Vector and scalar potential of the EM field; Some solutions of Maxwell's equations; Alternating current circuits;
- Special theory of relativity: Riemann metric space; Lorentz transformations;
- Quantum mechanics: Schroedinger's equation.

LITERATURE

[1] Michael Spivak, Elementary mechanics from a mathemaician's point of view, Michael Spivak, 2004
[2] R. P. Feynman, R. B. Leighton, and M. Sands, The Feynman Lectures on Physics, Vol. 2, AddisonWesley, 1963

STUDENT WORKLOAD (hours in a semester)

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

GRADING			**REMARKS**
Criterion	Maximum points	Minimum points	
Midterm exams	40	22	
Seminar paper	20	11	
Final exam	40	22	
T o t a l	100	55	