

Program		Type of studies (cycle)	Third cycle		
		Name of the program	SEE Doctoral Studies in Mathematical Science		
Course					
Course title		Optimal Control and Stochastic Optimization			
Course code	Semester	Course status	ECTS credits	Contact hours	
	II		10	30	
Teaching staff	Teacher	Prof. Dr. Mikhail Ivanov Krastanov			
	Other staff				
Course goals	The course should provide an overview on a wide range of methods for various optimization problems. Special attention is devoted to optimal control and stochastic optimization. The students should learn about the essential theoretical results and equally important, about numerical algorithms for solving optimization problems using methods under consideration. The course will also include some topics which are represented as research topics in this filed.				
Course content/topics					
<ul style="list-style-type: none"> • Dynamic programming <ul style="list-style-type: none"> ○ The Hamilton-Jacobi-Bellman equation ○ Linear-quadratic control problems • Stochastic optimization <ul style="list-style-type: none"> ○ Implicit filtering ○ Direct search algorithms 					
LITERATURE		Grading			
[1] P. Dorato, C. Abdallah, and V. Cerone, Linear-Quadratic Control, Prentics Hall, Englewood Cliffs, N. J., 1995. [2] K. Mietinen, Nonlinear Multiobjective Optimization, Kluwer, Dordrecht 1999. [3] J. Nocedal and S. Wright, Numerical Optimization, 2nd ed., Springer-Verlag, NewYork 2006. [4] R. E. Steuer, Multiple Criteria Optimization: Theory, Computations and Applications, John Wiley & Sons, New York 1986. [5] B. Rustem, Algorithms for Nonlinear Programming and Multiobjective Design, John Wiley & Sons, Chichester 1998.			Criterion	Points	Cut-off points
		1.	Written assignment	20	11
		2.	Project	40	22
		3	Final exam	40	22
		Total			100