Program		Type of studies (cycle)	Third cycle
		Name of the program	SEE Doctoral Studies in Mathematical Sciences

Course				

Course title		**Theory of complexity**		

Course code	Semester	Course status	ECTS credits	Contact hours
CS 660				30

Teaching staff	Teacher	
	Other staff	Prof. Dr. Ivan Landjev

Course goals	The foundations of the theory of computational complexity are presented in the course. Properties of the complexity classes P and NP are discussed. Certain NP-complete problems are examined and a proof of Cook's theorem is given. The class PSPACE and the notion of PSPACE- completeness are considered.

Course content/topics

- Time complexity and Space complexity
- Linear speed up
- Deterministic simulation
- The class **P**
- The class **NP**
- Polynomial time reducibility
- **NP** completeness
- The Cook-Levin theorem
- **NP** complete problems

LITERATURE
[1] Lewis, H. and Papadimitriou, C., Elements of the theory of computation, Prentice Hall, 2nd ed. 1998.
[2] Sipser, M., Introduction to the theory of computation, PWS Publishing company, 1997.
[3] Sommerhalder, R., Van Westrhenen S. C., The Theory of Computability: Machines, Effectiveness and Feasibility, Addison Wesley 1987.

Grading			
	Criterion	Points	Cut-off points
1.	Homework assignment	40	22
2.	Project	0	0
3	Final exam	60	33
	Total	100	55