

Study programmes: PhD studies – Mathematics-Probability and Statistics				
Course name: Stochastic Analysis				
Lecturers: Pavle. N. Mladenović, Jelena Jocković				
Status: Optional				
ECTS: 9				
Attendance prerequisites: Random Processes Theory				
Course aims: Getting the student familiar with mathematical foundations and general and specific knowledge in the field of stochastic analysis.				
Course outcome: The student has general and specific knowledge of stochastic analysis. The student is capable for scientific research in this field.				
Course content: Conditional mathematical expectation. Uniform integrability. Filtration, stopping times and stochastic processes. Martingales in discrete time. Martingales in continuous time. Predictable and totally inaccessible stopping time. Optional and predictable sigma algebras. Processes of finite variation. The Doob-Meyer decomposition. The structure of square integrable martingales. Quadratic variation. The stochastic integral. Semimartingales and differentiation rule. The exponential formula and Girsanov theorem. Random measures.				
Literature: R.J. Elliott, <i>Stochastic Calculus and Applications</i> , Springer-Verlag, New York, 1982.				
Number of hours: 10	Lectures: 4	Tutorials: -	Laboratory: -	Research: 6
Teaching and learning methods: Group or individual.				
Assessment (maximal 100 points)				
Course assignments	points	Final exam		points
Homework	20	Written exam		
Exercises / Tutorials		Oral exam		60
Colloquia		Written-oral exam		
Essay / Project	20			