

Study programmes: PhD – Mathematics				
Course name: Spectral geometry				
Lecturers: Miroslava Antić, Mirjana Đ. Đorić, Zoran P. Rakić				
Status: Optional				
ECTS: 9				
Attendance prerequisites: Riemannian geometry A, Riemannian geometry B				
Course aims: Acquisition of general and specific knowledge in spectral theory of operators of Laplace type on manifolds. Preparing student for individual scientific work: studying of literature in this theory and gradually including student for individual research work.				
Course outcome: Upon completion of the course, the student has necessary knowledge about: spectral theory of operators of Laplace type on manifolds, isospectral manifolds, manifolds with boundary and boundary conditions, Dirichlet, von Neumann, mixed and absolute boundary conditions, asymptotic formulas. Student is qualified to individual understanding basic examples and solving problems from this area. Also, student is qualified for individual studying of scientific papers from this area.				
Course content: Spectral theory. Operators of Laplace type. Isospectral manifolds. Manifolds with boundary and boundary conditions. Dirichlet and von Neumann boundary conditions. Mixed boundary conditions. Absolute boundary conditions. Asymptotic formulas.				
Literature:				
1. P. B. Gilkey, Invariance Theory, the Heat Equation, and the Atiyah-Singer Index Theorem, 1995, Second Edition, Studies in Advances Mathematics, CRC Press.				
Number of hours: 10	Lectures: 4	Tutorials: -	Laboratory: -	Research: 6
Teaching and learning methods: Lectures/ Tutorials				
Assessment (maximal 100 points)				
Course assignments	points	Final exam		points
Lectures	-	Written exam		-
Exercises / Tutorials	20	Oral exam		60
Colloquia	-	Written-oral exam		-
Essay / Project	20			