

Study programmes: PhD – Mathematics				
Course name: Homogeneous spaces				
Lecturers: Miroslava Antić, Srđan N. Vukmirović, Zoran P. Rakić, Mirjana Đ. Đorić				
Status: Optional				
ECTS: 9				
Attendance prerequisites: Riemannian geometry A, Riemannian geometry B, Groups in geometry A, Groups in geometry B				
Course aims: Acquisition of general and specific knowledge about homogeneous manifolds. Preparing student for individual scientific work: studying of literature from this theory and gradually including student for individual research work.				
Course outcome: Upon completion of the course, the student has necessary knowledge about: invariant connections, holonomy groups of invariant connections, the de Rham decomposition and irreducibility, symmetric spaces, the canonical connection on a symmetric space, totally geodesic submanifolds, Riemannian symmetric spaces, structure of symmetric Lie algebras, Hermitian symmetric spaces. 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: Invariant connections. Holonomy groups of invariant connections. The de Rham decomposition and irreducibility. Symmetric spaces. The canonical connection on a symmetric space. Totally geodesic submanifolds. Riemannian symmetric spaces. Structure of symmetric Lie algebras. Hermitian symmetric spaces.				
Literature:				
1. S. Kobayashi, K. Nomidzu, Foundations of Differential Geometry Vol. II, 1969, Interscience Publishers, New-York-London-Sydney				
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			