



Course title:	Differential Geometry
Department:	Department of Mathematics
Course code:	F2-DG
Erasmus subject code:	11.1 Mathematics
Number of contact hours:	45 hours
Course duration:	1 semester
ECTS credits:	6

Course description:

1. Manifolds, charts, atlas, sub-manifolds, smooth maps, submersion and immersion.
2. Vector bundles, tangent and cotangent bundle, vector and tensor fields, one-parameter group of a vector field, differential forms, the exterior differentiation d , the Lie differentiation.
3. The linear connection on a vector bundle, curvature tensor, torsion tensor, geodesics, normal coordinates, Bianchi identities.
4. Riemannian geometry, Riemannian space, the Levi-Civita connection, sectional curvature, manifolds of constant sectional curvature, metric in a Riemannian space, the Hopf-Rinow theorem.

Literature: K. Nomizu, S. Kobayashi Foundations of differential geometry

Course type:	Lectures and exercises
Assessment method:	Attendance, final exam
Prerequisites:	
Primary target group:	Students of mathematics and physics
Lecturer:	dr hab. Włodzimierz Jelonek
Contact person:	dr hab. Włodzimierz Jelonek, wjelon@pk.edu.pl
Deadline for application:	15th of September
Remarks:	