Module Name **Geometry in Physics**						
Type of Module Advanced Module			**Module Code** AM-GeomPhy			
Identification Number	**Workload**	**Credit Points**	**Term**	**Offered Every**	**Start**	**Duration**
MN-CS-GeomPhy	270 h	9 CP	1. – 3. Semester	variable	both	1 Semester

1	**Course Types**	**Contact Time**	**Private Study**	**Planned Group Size**
	a) Lecture	60 h	90 h	b) 30 Students
	b) Exercise	30 h	90 h	

2	**Module Objectives and Skills to be Acquired** The course introduces the background in differential geometry necessary to understand the geometrically oriented languages of modern theoretical physics. Applications include the coordinate invariant formulation of electrodynamics, phase space and symplectic mechanics, and a brief introduction to the foundations of general relativity.
3	**Module Content** • exterior calculus • manifolds • Lie groups • fibre bundles
4	**Teaching Methods** Lectures and Exercises
5	**Prerequisites (for the Module)** Formal: none Regarding the Contents: Training in theoretical physics at the B.Sc. level
6	**Type of Examination** Written or oral examination
7	**Credits Awarded** The module is passed and credit points are awarded if the 180-minute final exam is passed or the 30-45-minute oral final exam is passed.
8	**Compatibility with other Curricula** The course is part of the Master of Science Physics
9	**Proportion of Final Grade** 9/114
10	**Module Coordinator** A. Altland

11	**Further Information** **Recommended literature:** M. Göckeler & T. Schücker, Differential geometry, gauge theory, and gravity, Cambridge Universtiy Press, 1987