Course title:

Differential Geometry

Duration [number of hours]: 24

PhD Program [MERC/MPS/SPACE]: MPHS

Name and Contact details of unit organizer(s):

Dr. Alessandro Zampini
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Course Description [max 150 words]:

The aim of the course is to describe some aspect of classical mechanics within the framework of differential geometry.

Syllabus [itemized list of course topics]:

- Smooth manifolds; Vector fields and differential forms, the exterior Cartan calculus; Lie groups and Lie algebras;
- Metric structures on a manifold; Vector bundles, Connections and Curvature; Lagrangian and Hamiltonian formalism, Noether theorem, Hamilton-Jacobi equations

Assessment [form of assessment, e.g., final written/oral exam, solutions of problems during the course, final project to be handed-in, etc.]:

The exam will consist in delivering a seminar on an advanced topic within differential geometry.

Suggested reading and online resources:

4. Lecture Notes