

EuDiffGeo

is a collection of Mathematica notebooks and packages developed as an interactive introduction to

Euclidean Differential Geometry with Mathematica

The condition for using it interactively is the access to Stephen Wolfram's program Mathematica. The free program Wolfram CDF Player permits a passive look into the notebooks only. The notebooks and packages of EuDiffGeo are tested with Mathematica v. 9.0.1.0 and 11.1.1.0, but very likely they may be used with earlier versions too. Sometimes simplifications of large symbolic Output runs faster with version 9.0.1 than with version 11.1.1.

A prerequisite for using the course is the knowledge of analysis and linear algebra as usually learned in the first two years of a study of Mathematics.

The Introduction consists of the notebooks

1. EuCurvesv3.nb, "Euclidean Curve Theory",
2. euklsfv3.nb, "Surfaces in the Euclidean 3-Space",
3. Gausscurvature.nb, a subnotebook to euklsfv3.nb.

To work with the notebooks one needs the packages euvecv2.m, tensalgv3.m, eudiffgeov3.m contained in EDG.zip.

Furthermore I added Alfred Gray's collections of Curves and Surfaces: CURVES.m and SURFS.m. The packages Curves2D.m and Curves3D.m are the parts of CURVS.m containing the Mathematica definitions of plane Curves and of curves in the space.

Copy all the notebooks and packages into your working directory, open one of the notebooks 1. or 2., read the Section **Initialization**, and proceed as described there. The packages of EDG.zip should not be mixed or replaced by the packages of earlier versions, DGC.zip, or the packages of RG.zip. Not regarding this hint can lead to mismatch of the defined functions, and errors!

Have success and pleasure!

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