Differential Geometry (M24)
A. Kovalev

This course is intended as an introduction to modern differential geometry. It can be taken with a view of further studies in Geometry and Topology and should also be suitable as a supplementary course if your main interests are e.g. in Analysis or Mathematical Physics. A tentative syllabus is as follows.


**Pre-requisites**

An essential pre-requisite is a working knowledge of linear algebra (including dual vector spaces and bilinear forms) and of multivariate calculus (e.g. differentiation in several variables and the inverse function theorem). Exposure to some ideas of classical differential geometry would be useful.

**Literature**


Roughly, half of the course material is taken from [4]. The book [3] covers the required topology. On the other hand, [1] which has a chapter on vector bundles and on connections assumes no knowledge of topology. Both [1] and [2] have a lot of worked examples. There are many other good differential geometry texts, e.g. the five volume series by M. Spivak.

**Additional support**

The lectures will be supplemented by four example classes, the fourth class to take place at the beginning of Lent Term will also fulfill a revision function. Printed notes will be available from [https://www.dpmms.cam.ac.uk/~agk22/teaching.html](https://www.dpmms.cam.ac.uk/~agk22/teaching.html)