Differential geometry

1. Euclidean spaces

    (a) Smooth functions and tangent vectors

    (b) Alternating k-linear functions

    (c) Differential forms

2. Manifolds

    (a) Smooth manifolds

    (b) Smooth mappings on manifolds

3. Tangent spaces

    (a) Tangent space

    (b) Submanifold

    (c) Tangent bundle

    (d) Vector field

4. Differential forms

    (a) Cotangent space

    (b) k-forms

    (c) Exterior derivative

5. Integration on manifolds

    (a) Orientation

    (b) Manifolds with boundary

    (c) Stokes theorem

Literature:

1. Tu, L: An Introduction to Manifolds, Springer, 2008

2. Lee, J: An Introduction to Smooth Manifolds, Springer 1997