

## COURSE DETAIL

### DIFFERENTIAL GEOMETRY

**Country**

Sweden

**Host Institution**

Lund University

**Program(s)**

Lund University

**UCEAP Course Level**

Upper Division

**UCEAP Subject Area(s)**

Mathematics

**UCEAP Course Number**

188

**UCEAP Course Suffix****UCEAP Official Title**

DIFFERENTIAL GEOMETRY

**UCEAP Transcript Title**

DIFFERENTIAL GEOMTRY

**UCEAP Quarter Units**

6.00

**UCEAP Semester Units**

4.00

## Course Description

The course provides an introduction to classic differential geometry, important for further studies in the subject and in relevant areas of physics. The course treats the geometry of curves and surfaces, especially in three dimensions. In particular, the concepts of curvature and torsion are studied. The course covers: The geometry of curves in Euclidean space, their curvature and torsion and how these determine the curves. The geometry of surfaces in Euclidean space, their first and second fundamental forms, the Gauss map, principal curvatures, Gaussian curvature and mean curvature. Theorema Egregium and a deep analysis of geodesics and their behavior both locally and globally. Gauss-Bonnet's Theorem: two different local versions and the famous global version.

## Language(s) of Instruction

English

## Host Institution Course Number

MATM33

## Host Institution Course Title

DIFFERENTIAL GEOMETRY

## Host Institution Course Details

<https://www.lunduniversity.lu.se/lubas/i-uoh-lu-MATM33>

## Host Institution Campus

Lund

## Host Institution Faculty

Science

## Host Institution Degree

## Host Institution Department

## Course Last Reviewed

2024-2025

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