

Representation of Curves and Surfaces

13th Helsinki Summer School, Finland

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- Instructors: Antti H. Niemi (antti.h.niemi@aalto.fi) and Lauri Perkkiö (lauri.perkkio@aalto.fi)
- Lectures: Monday–Friday from 10.15 to 12.00 at U510
- Computer Lab: Monday–Friday from 13.15 to 15.00 at U414
 - Exception: On Wed 8.8. and Thu 9.8. the lab is at Maari-C!

- Introduction to computer aided geometric modeling and mathematics of curves and surfaces
- To develop the student's understanding of and ability to use computer aided techniques for the representation of geometric objects
- Prerequisites: Basic knowledge of differential calculus and linear algebra
- Learning outcomes: Understanding of how geometric objects can be defined in mathematical terms suitable for computer implementations

- 1 Introduction
- 2 Transformations of the Plane (1 class)
- 3 Homogeneous Coordinates (1 class)
- 4 Curves (2 classes)
- 5 Bézier Curves (2 classes)
- 6 B-Splines (2 classes)
- 7 Non-uniform Rational B-Splines (NURBS) (1 class)
- 8 Surfaces (1 class)
- 9 Curvature (1 class)
- 10 Isogeometric Analysis (1 class)

- Class will be taught with twelve two-hour lecture and exercise sessions
- Homework assignments will be given on a daily basis
- Students who complete successfully at least 80% of the course assignments will receive a passed grade
- Lecture notes and the assignments are available at:
<http://math.tkk.fi/~ahniemi/hss2012/>