

Representation of Curves and Surfaces

14th Helsinki Summer School



Aalto University

August 7–22, 2013

- Instructors: Antti H. Niemi (antti.h.niemi@aalto.fi) and Mahmoud Mousavi (mahmoud.mousavi@aalto.fi)
- Lectures: Monday–Friday from 10.15 to 12.00 at R5
- Computer Lab: Monday–Friday from 13.15 to 15.00 at Maari-A

- Introduction to computer aided geometric modelling
- Prerequisites: Basic knowledge of calculus and linear algebra
- Learning outcomes:
 - 1 Understanding of how geometric objects can be defined in mathematical terms suitable for computer implementations
 - 2 Ability to apply computer methods in geometric modelling
 - 3 Development of technical reporting skills
 - 4 Gain experience in interdisciplinary team working

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

- Class is taught with twelve two-hour lecture and exercise sessions
- Computer assignments are given on a daily basis
- Students who complete successfully at least 75% of the course assignments will receive a passed grade
- Lecture notes and the assignments are available at:
<http://math.aalto.fi/~ahniemi/hss2013/>