COURSE DETAIL

SURFACE MODELLING, RENDERING, AND 3D
Country Sweden
Host Institution Lund University
Program(s) Lund University
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Mechanical Engineering
UCEAP Course Number 106
UCEAP Course Suffix
UCEAP Official Title SURFACE MODELLING, RENDERING, AND 3D
UCEAP Transcript Title SURFACE MODELLING
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description

This course provides the basic insights into the use of advanced computer aided tools for 3D product modelling. From a product idea a computerized model is made (product modelling) of a physical object by surface modeling, 3D scanning, and printing. Product simulation gives an insight to the use of real time simulation (Virtual Reality, VR). The created product models give possibilities to simulate the relations between man, product, and environment. The course includes parts of 3D product modelling by surface modelling, scanning, product simulation, modelling and Rapid Prototyping in 3D. The computerized surface modelling (Rhino och Maxwell studio) deals with the following areas: introduction to 3D modelling; interface basics, primitive objects (spheres, cubes, cylinders); transformation, mirror, and duplicate objects; NURBS-curves (CVs, Edit points and Key-points curves); turn curves into different types of NURBS surfaces (skinned, revolved, planar, extruded and swept); edit CV-curves; working with layers and use layer symmetry; trim excess of surfaces; create advanced double bent surfaces. Other areas covered in the course are create STL (Sterio Lithography) file; export model to CAD-program; rendering basics using different types of renders including light setup, shaders and textures; animation basics. The computerized product simulation deals with the following areas: introduction to Virtual Reality; interface basics; importing 3D objects; associate behaviors with the objects; create interactivity; the 3D scanning part includes some basic 3D scanning methods; scanning objects and exporting the data to a computer program. The rapid prototyping part of the course includes creating a 3D print from a computerized product model to a physical object. Assumed prior knowledge: MMK010/MMKA15 Manual and Computer Aided drafting in Mechanical Engineering.

Language(s) of Instruction
English

Host Institution Course Number
MMKF25

Host Institution Course Title

SURFACE MODELLING, RENDERING AND 3D

Host Institution Course Details
https://kurser.lth.se/lot/course-syllabus/26_27/MMKF25

Host Institution Campus
Lund

Host Institution Faculty
Engineering

Host Institution Degree

Host Institution Department

Course Last Reviewed
2025-2026

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