



# CM207V Basic Medical Image Visualization 3.0 credits

Grundläggande medicinsk bildvisualisering

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

Course syllabus for CM207V valid from Autumn 2024

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Medical Engineering

## Specific prerequisites

Completed degree project 15 credits, 15 credits in mathematics, 15 credits in physics, 6 credits in programming. Alternatively, 1 year of professional experience in medical technology, technical physics, electrical engineering, or computer science. English 6/B.

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

After completion, the participant will be able to:

- Understand the different parts of a visualization pipeline
- Understand the theory of the most used methods for surface and volume rendering
- Summarize the most used techniques in volume interaction and stereo rendering

in order to:

- understand the complete visualization pipeline in a medical context
- be able to implement basic visualizations of medical images
- have a broad knowledge base that can ease understanding literature in the field

## Course contents

The course consists of lectures and laboratories. The participants will combine VTK (the Visualization Toolkit) in Python with other libraries. The course also includes introductory labs for students with programming experience but without experience in Python. Content:

- The visualization pipeline
- Surface reconstruction and rendering
- Volume rendering and interaction
- Stereoscopic techniques

## Examination

- TEN1 - Written exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.