

Computer Graphics and Applications

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The course will provide an overview of the fundamental techniques for rendering images in computer graphics, namely ray tracing and rasterization, and the related concepts and tools in linear algebra and geometric modeling.

The course includes a practical part allowing the students to implement some simple graphics applications in C++ without special libraries or hardware.

Syllabus:

- Introduction to C++ (for C-like users)
- Basic concepts in linear algebra
- Ray tracing
- Geometric meshes
- Affine and projective transformations
- Transformations in the graphics pipeline
- Rasterization
- Tools for designing graphics applications

Prerequisites:

- Linear algebra (vectors, matrices)
- Basic programming in some C-like languages (C, C++, Python, Java, etc.).

Reference book (not mandatory):

Steve Marschner, Peter Shirley

Fundamentals of Computer Graphics, 4th Edition

AK Peters / CRC Press