# t.CGR - Computergrafik

| | |
|---|---|
| **Person responsible for the course:** | Thomas Bach, bact |
| **Responsible OU:** | |
| **ECTS:** | 4 |
| **Valid for:** | 2012/2013 |
| **Last saved:** | 02.04.2013 13:31 |

## Expertise:

-

## Methodological skills:

-

## Social skills:

-

## Personal skills:

-

## Learning objectives:

- The students know the basics of computer graphics (primarily 3D).

- They are capable to develop with standardized APIs animated and interactive graphic applications

## Course content:

- Graphics pipeline

- Mathematical foundations (transformations, homogeneous coordinates, perspective viewing)

- Light computations

- Shading and textures

- OpenGL

- Color theory, blending, antialiasing

- Collision detection

- Raytracing

- Curves and surfaces

- Graphics Hardware and GPU programming (GLSL)

- Advanced topics (shadow-, environment, bump mapping, particle animation)


Practical work:

- Developing an application in OpenGL

- Developing a ray tracer

- Developing an application in GLSL (GPU programming)

## Previous knowledge:

- Programming in C

- Linear algebra, geometry (transformations)

**Teaching method:**

| Type of lesson: | Number of lessons per week: |
|---|---|
| Lecture | 14*2 |
| Tutorial/Practicum | 14*2 |
| Block instruction | |

**Assessment:**

According to the table or as specified in writing by the lecture at the beginning of the semester!

| description | type | form | scope | assessment | weighting |
|---|---|---|---|---|---|
| Performance records during school hours | Intermediate exam / practicum | writen | | | 15% / 25% |
| Semester end exam | Final exam | writen | | | 60% |

**Language of instruction:**

German, English documentation

**Instruction material:**

- Powerpoint slides (see www.zhaw.ch/~frup/cgr

- Complementary: F.S.Hill, "Computer Graphics Using OpenGL", Prentice Hall 2007, ISBN 0-13-149670-0

**Additional literature:**

-

**Comments:**

-