

Applied Computer Graphics

Special Subjects
Elective 2 credit

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1. Course Description

By a performance enhancement of CPU and GPU, contents using three-dimensional CG (3DCG) such as game, VR, AR come to be seen widely. In the development of such contents, the 3DCG software and game engine which gathered up functions necessary to game development such as 3D models, pictorial images, voice data are used. This course deals with some topics about modeling, animation, rendering, effect used in the latest 3DCG contents development. This course is related to diploma policy 2 and 3.

2. Course Objectives

By the end of the course, students should be able to do the following:

- acquire the basic functions and usage of 3DCG and game-engine software.
- acquire the expressions and implementations of 3D modeling and material setting procedures in 3DCG softwares.
- acquire the expressions and implementations of animations, shaders and effects used in game engines.

3. Grading Policy

Grading will be decided based on reports (20%) and term-end examination (80%).
Feedbacks on reports and examinations will be given on LMS.

4. Textbook and Reference

Textbook

The Learning materials are published on the LMS.

5. Requirements(Assignments)

The students are expected to read lecture materials and fill blanks in "main point notes" as preparation. It takes approximately one hour to finish this work.

6. Note

7. Schedule

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| [1] | Foundations of 3CG software, the basics of modeling |
| [2] | Applied modeling (1) subdivision surfaces, curves, beveling |
| [3] | Applied modeling (2) sculpting, array, particles |
| [4] | Material settings (1) basics of node editor |
| [5] | Material settings (2) texture settings |
| [6] | Lighting |
| [7] | Camera settings, rendering |
| [8] | The basics of Unity |
| [9] | Export and import of the 3D models |
| [10] | Render pipeline |
| [11] | Shader (1) basics of ShaderGraph |
| [12] | Shader (2) expressions using ShaderGraph |
| [13] | Effect (1) VFX Graph |
| [14] | Effect (2) expressions using VFX Graph |
| [15] | Summary |