



Computer Graphics (under)
Sep., 2016

Basic information

- **Instructor**

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- **TA**

- 李啟暘、鄒佳宏、張軒銘、曹郡欣、許庭偉
 - 工三館 **512 x54787**

- **Focus**

- **3D graphics: theory and practice**
 - **Intro to 3D game and VR technologies**

- **Web pages**

- cggmwww.csie.nctu.edu.tw for course materials
 - **e3 for discussion**

Course outline

- **Fixed pipelined graphics**
- **Programmable pipelined graphics**
- **Global illumination**

Fixed pipelined graphics

- **Rendering pipeline**

- **Input**

- object mesh, parameters for lighting and viewing, materials (texture maps)

- **Geometric processing**

- Vertex lighting
 - View transform
 - View-volume/back-face culling

- **Pixel processing**

- Rasterization – polygon shading
 - Texture mapping
 - Hidden surface removal by Z-buffer

- **Write to frame buffer**

Programmable pipelined graphics

- **GPU**
 - **Pixel shader**
 - **Vertex shader**
 - **Geometry shader**
- **Shader programming**
- **General Purpose GPU (GPGPU)**

Grading

- **Participation**
 - **No bonus (if there is one) will be given at end if missing more than 3 classes.**
- **Two exam: midterm (18%), final (18%)**
- **Quiz (14%)**
 - **The lowest grade will be dropped (缺考不納入)**
- **Programming assignments (50%)**
 - **3 programs (15+15+20)%**
 - **Project is possible for the 3rd assignment**
 - **Policy for late submission**
 - **5% off each day**

Reference books

References

- **Interactive computer graphics, Fifth ed., by Edward Angel, Addison Wesley**
- **Fundamentals of Computer Graphics, 2nd ed., By P. Shirley et al., A K Peters, Computer**
- **Graphics with OpenGL, 3rd ed, by D. Hearn and M.P. Baker, Prentice Hall, 2004.**
- **OpenGL Programming Guide, 6th ed., by D. Shreiner, M. Woo, J. Neider, and T. Davis, Addison-Wesley**