CS3241
Computer Graphics

Semester 1, 2022/2023

Module Info

School *of* Computing
National University *of* Singapore

Lecturer

- Dr. Low Kok Lim
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Module Objectives

- Broad introduction to Computer Graphics
- Focus on **real-time interactive** 3D computer graphics
- Use **OpenGL** API
- After the course, students are expected to understand basic computer graphics terminology and concepts, and be able to design and implement simple 2D and 3D interactive computer graphics related programs

Syllabus

- Introduction to Computer Graphics
- Elementary OpenGL Programming
- Input and Interaction
- Geometric Objects & Transformations
- Camera & Viewing
- Clipping, Rasterization & Hidden-Surface Removal
- Illumination & Shading
- Texture Mapping
- Basic Ray Tracing
- Parametric Curves and Surfaces
- Misc. Topics

Pre-requisites

- CS2010 / CS2020 / CS2040 & CS2030
- C / C++
- Basic Data Structures
  - E.g. arrays, linked lists, trees
- Basic Vector Operations
  - E.g. dot product, cross product
- Simple Linear Algebra
  - E.g. matrix multiplication, matrix transpose
- Basic Trigonometry
- Basic Calculus concepts
- Interested in computer graphics 

Assessments

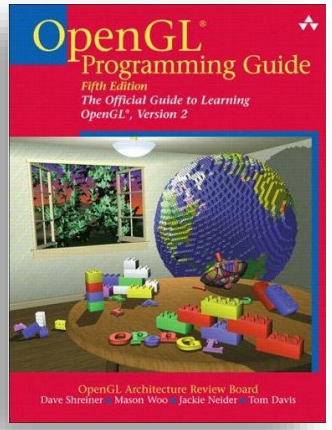
- **Tutorial Attendance:** 5%
- **Lab Assignments**: 30%
  - 4 lab assignments
- **Midterm Test**: 25%
  - Open-book
- **Final Exam**: 40%
  - Open-book

Schedule

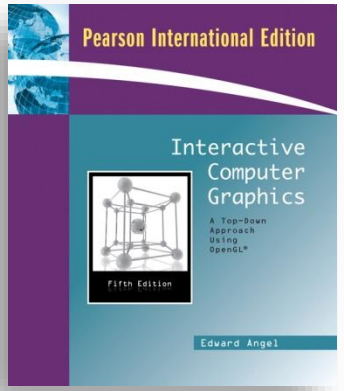
- Lectures
  - Every **Friday 2pm-4pm**, in **LT19** (Webcast recorded)
- Tutorial Sessions
  - Every **Monday** / **Tuesday** / **Wednesday** (start in Week 3), 2 hours, in **Media Lab 1** (AS6-04-21)
- Midterm Test
  - Week 7, **30-Sep-2022, Friday, 2pm-4pm**, **venue TBA**
- Final Exam
  - **29-Nov-2022, Tuesday, 1pm-3pm**, **venue TBA**

Reference Books

- **The OpenGL Programming Guide** (The Redbook), Addison-Wesley
  - 2nd Edition is freely available online at http://www.glprogramming.com/red/



- **Interactive Computer Graphics: A Top-Down Approach Using OpenGL**, 5th Edition
  - by Edward Angel



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