

# EE 4702-1: GPU Programming

## Where/When/Who

Room 1125 B.E.C.

MWF 9:30–10:20 Fall 2021

<https://www.ece.lsu.edu/koppel/gpum/>

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Office Hours: Monday–Friday: 15:00–16:00.

## Prerequisites

*By Course:* CSC 3102.

*By Topic:* Programming in C++.

## Topics

- Introduction
  - Graphics software/hardware organization.
  - Physical simulation quick overview.
- Basics of 3D Computer Graphics
  - Coordinates, vectors, lines, planes, intercepts, transforms, etc.
  - Primitives and scene representation.
- GPU Organization and Shader Programming
  - Hardware abstraction for 3D graphics by the Vulkan and OpenGL APIs.
  - Rendering pipeline, programmable shaders, and OpenGL Shading Language.
  - Shader programming for graphical and non-graphical computations.
- GPU Physical Simulation and CUDA or OpenCL Programming
  - Physical simulation techniques.
  - CUDA, Compute Shader, or OpenCL programming for physical simulation.

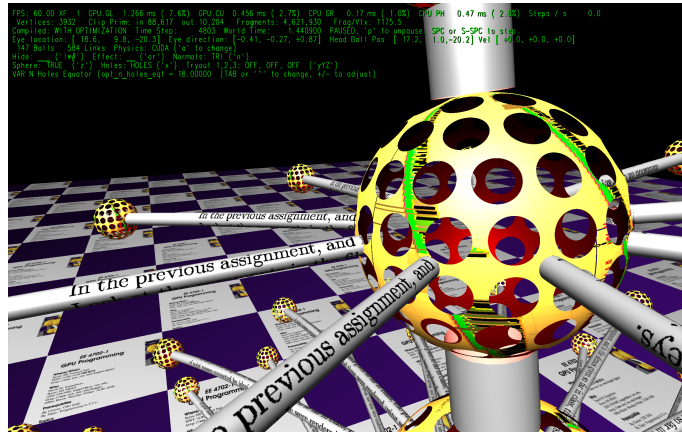
Topics subject to change.

**Text** To be determined.

**Grading** 35% Midterm Exam • 35% Final Exam • 30% Homework and Projects. Plus/minus grading will be used. Final exam weight may be increased for students doing better on the final than on the midterm.

**A.D.A.** Louisiana State University is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Any student with a documented disability needing academic adjustments is requested to speak with Disability Services and the instructor, as early in the semester as possible. All discussions will remain confidential. Please contact Disability Services in 115 Johnston Hall, 225-578-5919 or at <https://www.lsu.edu/disability>.

Late assignment penalty: 10% per day late deducted. Missed-midterm-exam policy: at instructor's discretion either a makeup exam, use final exam grade for midterm grade (*i.e.*, 70% final exam weight), or use of zero for midterm grade. Daily attendance: optional, however students are responsible for all material, instructions, and notices presented in class.



2018 Homework 4

