

## ETGG2801 — Graphics 1

### Lab 4 — Save the Boat/Phong Shading and Texture Mapping

Due by 12/8/2015

#### Overview

In this lab, you will be creating a 3D game where the player will need to fend off dinosaurs from attacking his/her boat. This game will be played from the first-person perspective.

#### Tasks

1. Create a plane for the boat, player, and dinosaurs to move on.
  - The player must be constrained to the plane, unable to move off of it.
  - The player's y position must be determined by the plane's y position—you will simulate the player standing on the plane.
2. Randomly generate dinosaurs and have them move towards the boat. If they reach it, decrease the boat's "health" by some amount.
  - You are free to choose how much health the boat has, as well as how much health will be taken away when a dinosaur reaches it. You are also free to determine what happens to a dinosaur if it reaches the boat (disappears, remains and damages the boat over time, etc).
3. The player should be able to shoot the dinosaurs with projectiles, causing them to disappear.
  - You will render an image of a reticle in front of the player to indicate where he/she is aiming.
  - When the player clicks the left mouse button, fire a projectile down the **-lookat** axis.
  - The player will move and look around the scene using the keyboard and mouse, respectively.
  - You will use bounding spheres or bounding boxes for the projectiles, boat and dinosaurs.
4. The game should end when the boat is destroyed. When the game ends, print out the total amount of time (in seconds) the game was running.
5. Your game must support both phong shading and texture mapping simultaneously.