

CAP 4028 – Game Programming

Credits: 3 credits

Textbook, Title, Author, and Year: Materials from the Internet

Supplemental Materials: None

Specific Course Information

- a. **Catalog Description:** Introduction to designing and building video games using high level programming languages and animation libraries. The techniques learned can be applied to simulations, instrumentation, and educational software and other software applications that require dynamic high speed interactive displays of graphic objects.
- b. **Prerequisites:** COP 3530
- c. **Required, Elective or Selected Elective:** Elective

Specific Goals for the Course

Specific Outcomes of Instruction: The primary objective of this course is to provide a good understanding of video game programming. This includes object oriented programming using JavaScript. It also includes good program design and development practices. The course includes 2D and 3D animation and control of Sprites using Finite state Machines. There will be an emphasis on designing and writing reusable code that generalizes the solutions to problems and encapsulates them in objects. We will cover the interaction between sprites, other sprites, and player(s). We will also cover user interface, sounds, game design, and some artificial intelligence.

Brief List of Topics to be Covered

- Simple Animation
- Use of an Introductory HTML5 Game Framework by Thomas Fernandez
- Use of an Advanced HTML5 Game Framework by Thomas Fernandez
- Text Display During Games
- Sounds and Music During Games
- User Input From Keyboard and Mouse During Games
- Use of Finite State Machines to Control Game Objects
- Pools of Objects for Dynamic Allocation
- Game Objects Made of Multiple Components that Move Independently but Relative to Other Objects
- Animation and Scrolling of Backgrounds
- Use of AI in Game Programming
- 3D Objects Positioning and Rotation (Pitch, Yaw and Roll)
- 3D Camera Positioning
- 3D Lighting and Lighting Effects