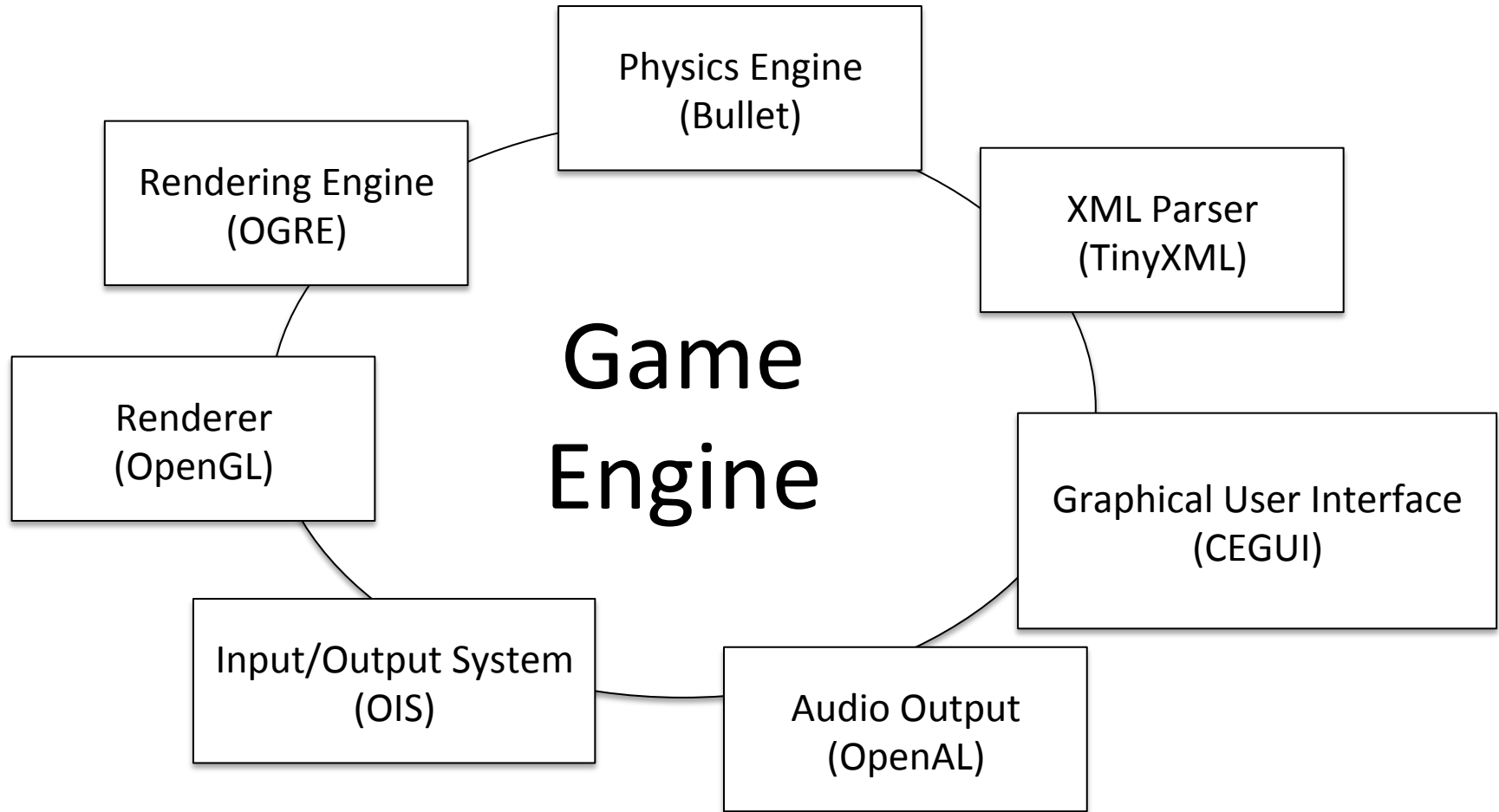


Game Engine Programming

Game Engine Components



Game Components

Models

Textures

Scenes

Animations

Images

Scripts

GUI
Layouts

Materials

A.I.

Saved
Data

GUI
Layout

Sound/
Music

System
Config.

Video

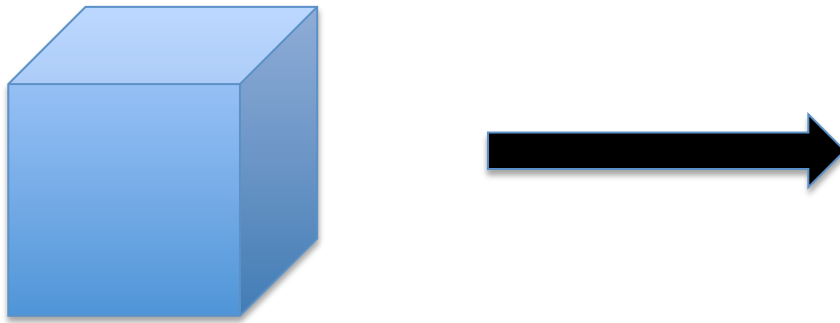
Keyboard
Mapping

Game Loop

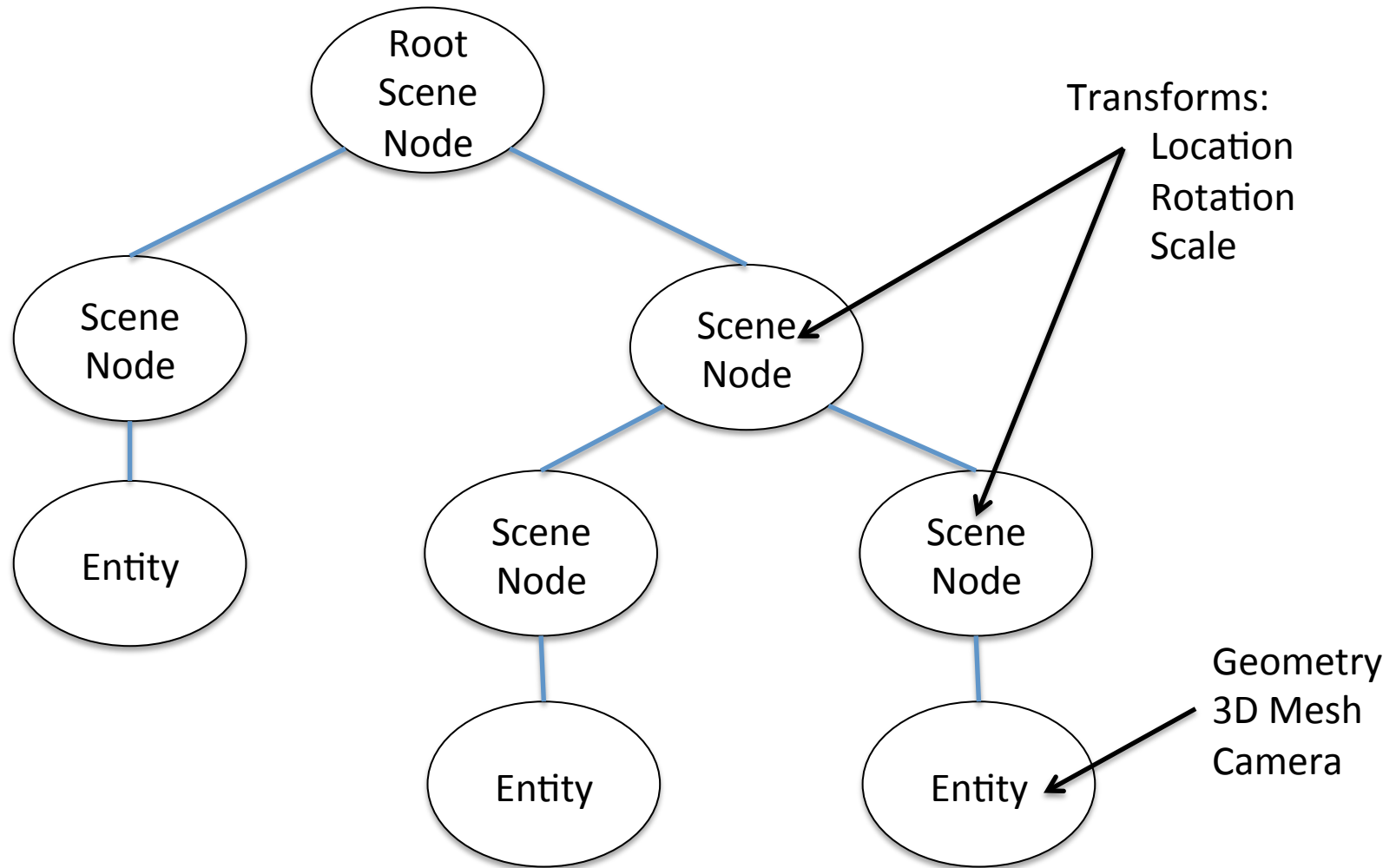
```
configuration();  
create_the_scene();  
while(!done) {  
    read_input_state();  
    update_game_objects();  
    render_scene();  
} //end while  
clean_up();
```

Timing

- Each iteration of the loop varies in time.
- How can we make movement smooth?



Scene Graph



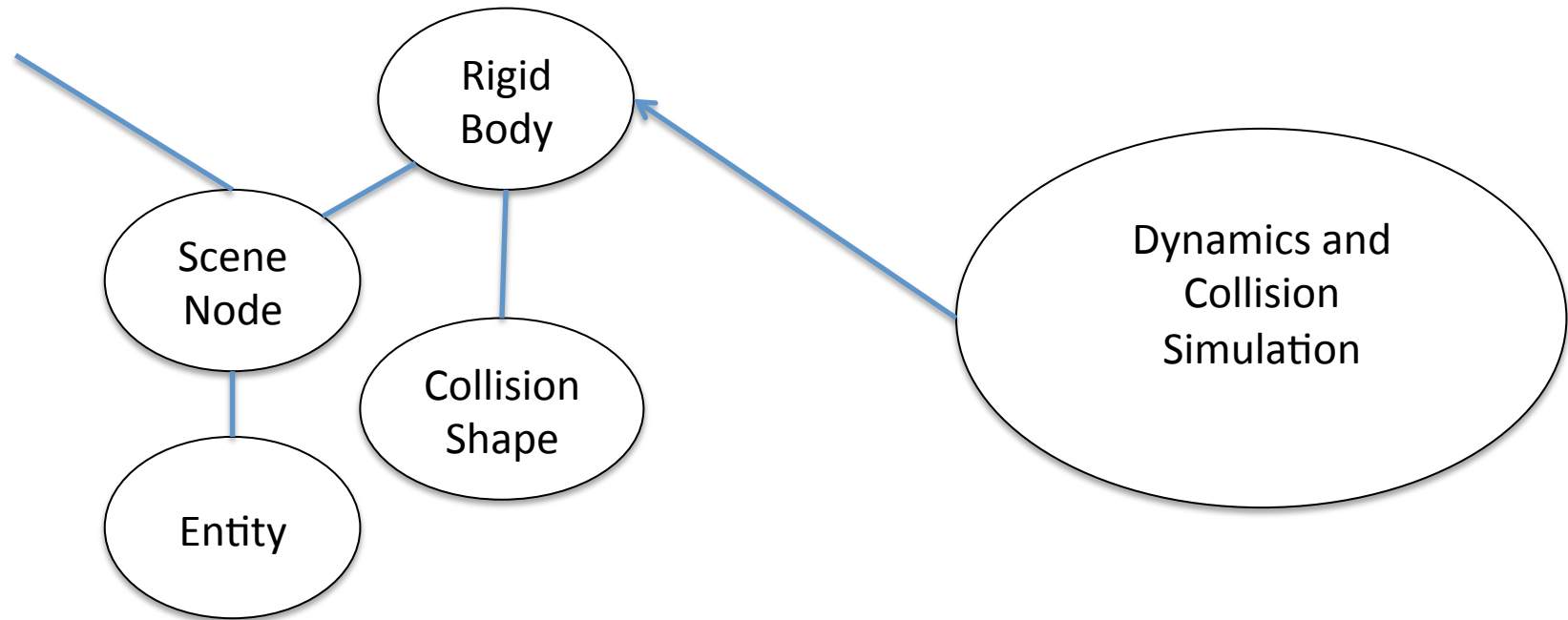
OGRE Demonstration

- Open up a terminal window
- Run the command: `SampleBrowser`
- Try out some samples.
- Move around a scene.

Physics Engine

- Manages collisions.
- Force, torque, velocity.
- Friction and restitution.
- Rigid and soft bodies.

Physics Engine Objects



Bullet Demonstration

- Open a terminal window.
- Run the command: `BulletDemo`
- Commands vary: `h` sometimes brings help.
- Try different demos.
- Right-click often fires blocks at the scene.

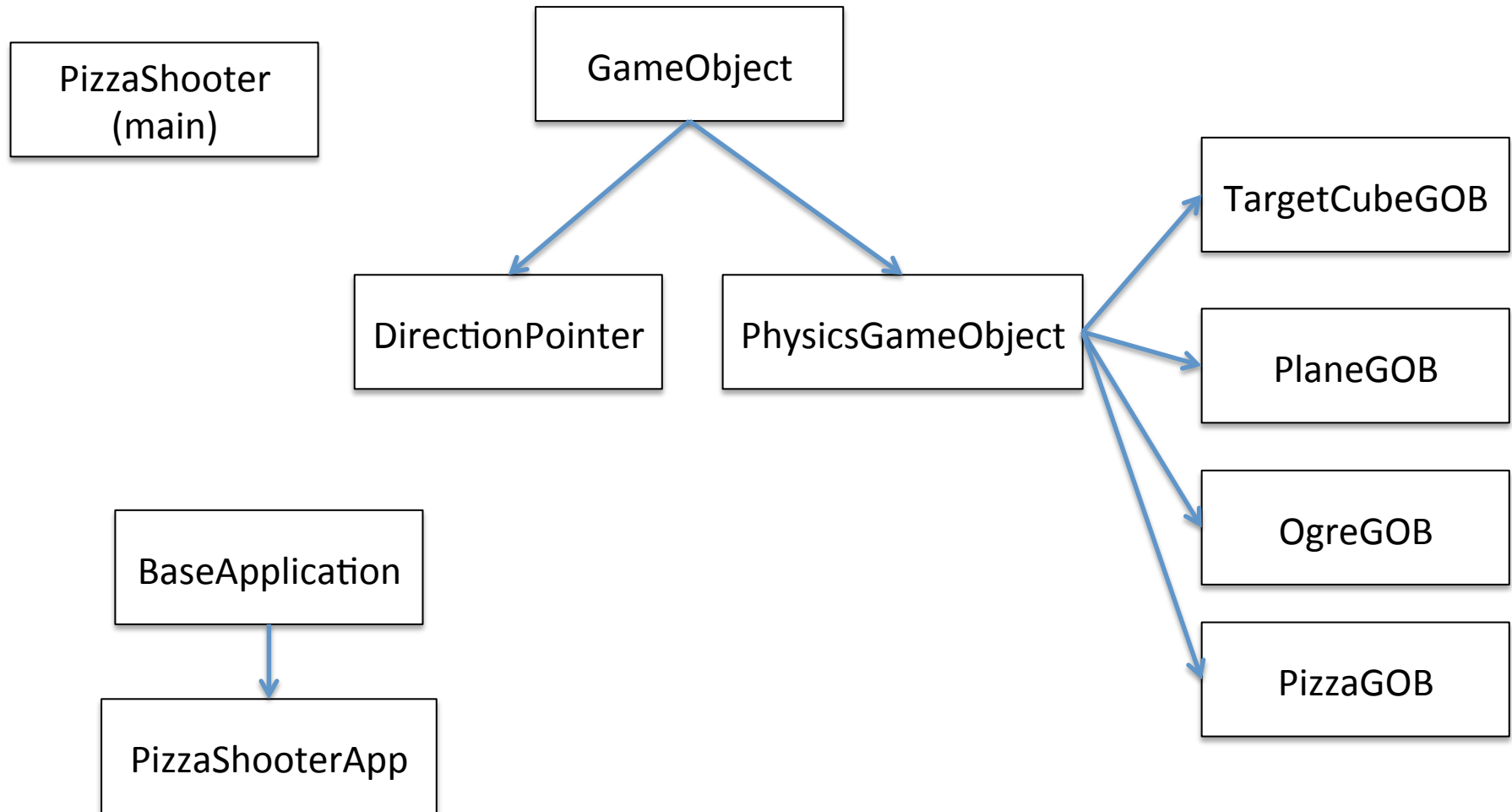
OGRE/Bullet Example

- Open eclipse in a new workspace.
- Menu: File->Import
- General->Existing Project into Workspace
- Click “Next”
- Click “Select Archive File” and browse to find: /Courses/cs391/PizzaShooter2.zip
- Click “Finish”
- Switch to C++ Perspective

OGRE Bullet Example

- C++ Classes: Header and implementation files
- PizzaShooterApp
 - FrameRendering Events
 - manageCollisions
- PizzaGOB
 - firePizza
- OgreGOB
 - Animation

PizzaShooter classes



Hazards of C++/OpenSource

C++

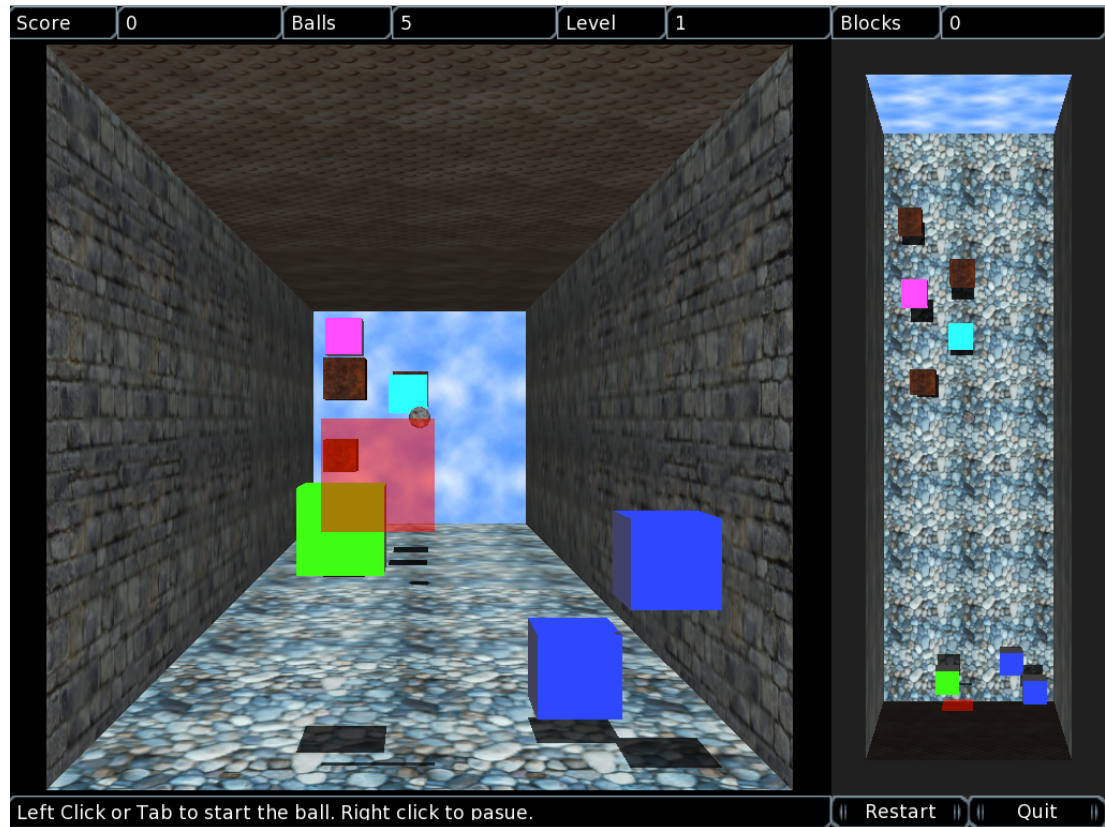
- Memory management
- Error Messages
- Syntax
- Linking libraries
- Cross platform issues

OpenSource

- Buggy
- Complex
- Version maintenance

CS 391: Spring 2015

- C++ Programming.
- Managing small software projects.
- Writing and testing games!



CS Elective Courses 2014-2015

Fall 2014

- CS 360 Database
- CS 373 Graphics

Spring 2015

- CS 322 Networks
- CS 371 Artificial Intelligence
- CS 391 Selected Topics
- PHY 240 Electronics