

- Week 1: Intro to 3d graphics concepts
 - Cover basic unity interface
 - Cover basic 3d vector math
 - Cover basic virtual camera concepts

- Week 2: Hardware Integration
 - How to interface unity with other hardware and software
 - Introduce example projects using OSC / Kinect / Video Tracking / Arduino / Web

- Week 3: Advanced Vector Math Tricks
 - Pragmatic look at using vectors without needing to know crazy linear algebra
 - Focus on useful applications of quaternions and vector operations

- Week 4: Meshes + bone based animation
 - How to generate and import complex geometry
 - Animation of meshes in real time

- Week 5: Shaders / Lighting
 - Advanced lights and material properties
 - Intro to shader programming in ShaderLab

- Week 6: Projection Mapping
 - Introduction to mixing virtual and physical spaces using projection mapping

- Week 7: Project workshopping and covering special topics

Assignments

You may choose to build one large project, adding to it through each of the assignments. Or you may opt start fresh for each one. The assignments may be done individually or in pairs of two. It's often helpful to pair up with someone with complimentary skills, matching more technical students with more visually oriented people.

1) Perceiving the abstraction of your surroundings. Recreate a scene using only primitives and textures

- for example:
 - recreate the objects in a room using only cubes and photographic textures from your digital camera
 - draw a landscape from site using hand coded 3d curve lines
 - recreate your path from school/home solely from the landmarks in your memory

2) Interactive Imagination: Use an external input to generate an interactive virtual environment from real world input
for example, if we created a simulated garden in 3d space we could make it interactive by...

- using a camera to track visitors as they walk through a lobby, their presence trampling our virtually simulated garden.
- Weather data from the internet restores the garden when it rains
- A real flower is rigged with actuators to control the movements of a virtual flower model as it blooms

3) Inherent stories - Recount the narrative of an object or space by projection mapping it

- Take assignment 1 or 2 and project it into a physical space to make it interactive
- Use Kinect to create a 3d model of an object then project animations back onto it
- Create virtual characters or organisms that occupy a mixed physical and virtual space