AET 339 GAME ART PIPELINE

UID: 20980
Meetings: T/R 11:00a - 12:30p
Location: DFA 4.106

TA: Larkin Williams-Capone

Abstract

A introduction to creating and working with game ready assets in 2D and 3D. Students will learn how to manage poly counts, create LODs, retopologize models, modify existing assets, export content from 2D and 3D authoring tools, create efficient UVs, work with realtime shaders, manage textures, work with audio, and test assets in a game engine.

Objective

Learn the fundamentals of authoring and integrating game ready assets.

Assessment

This course is project based. There will be no exams. Grading is based on successful completion of project objectives. Assignments are equally weighted toward 90% of the final class grade. The remaining 10% of the final grade is based on professionalism which is earned by attending class during the scheduled meeting times and conducting oneself in a professional manner.

No late work will be accepted. No incompletes will be given. If you feel you will not be able to complete all work on time, you should ask the instructor for a grade of Q or drop before the deadline for doing so passes.

Note: If you catch the flu, get a flat tire, or otherwise cannot attend class, please send an email and attach any class work as needed.

Final grades will be determined on the basis of the following rubric. Please note: to ensure fairness, all numbers are absolute, and will not be rounded up or down at any stage. Thus a B- will be inclusive of all scores of 80.000 through 83.999. The University does not recognize the grade of A+.

Letter grade equivalents:

A = 94-100
A- = 90-93
B+ = 87-89
B = 84-86
B- = 80-83
C+ = 77-79
C = 74-76
C- = 70-73
D+ = 67-69
D = 64-66
D- = 60-63
F = 0-60

Classroom Policy

Devices

- Must be kept in silent mode unless an emergency notification is expected (please discuss this with me prior to class).
- Can be used for research and class note taking, but not for social media (unless related to class activities)

Food/Drink

- Food is not allowed in class.
- Drinks in closed containers are permitted but must be kept on the floor or out of sight when not in use.

Required Equipment

All students MUST have access to a portable computer capable of running a game engine such as Unity or Unreal. Either Mac or PC is fine.

Calendar

Note – This is outline, assignments, and reading are subject to change by the instructor, without notification in certain cases.

Week	Class Meetings	Project
1 8/30	Course Intro Lecture - Ideation, mood boards **HW**: Research/Ideation/Mood boards	Project 1
2 9/4	Demo - Research/Ideation/Comps **HW**: Comps	
	LAB **HW**: Comp Revisions	
3 9/11	Lecture - 2D graphics: bitmaps, vector, color channels, blend modes, color modes, gamma v linear. **HW**: Comp Revisions	
	Demo - integration, sprites, particle FX, postFX LAB **HW**: Integration first pass	
4 9/18	Demo - Audio waveforms, sample rate, bit depth, filters, sessions, levels, looping, formats **HW**: Asset Revisions/Ambient audio	
	Demo - animated sprites LAB **HW**: Integration second pass	
5 9/25	Demo - Recording video, breakdown example **HW**: Revisions	
	LAB **HW**: Polish	
6 10/2	Demo/LAB as needed **HW**: Publish	
	LAB PROJECT 1 DUE	
7 10/9	Project 1 postmortem/discussion. Intro to Project 2	Project 2

	HW: Research/Ideation/Mood boards	
	Demo - Block in, mini-landscape modeling demo, landscape integration LAB **HW:** Comps/Block-ins	
8 10/16	Lecture - 3D surfaces (nurbs, subd, poly (mesh)), constraints for games, anatomy of a polygon, verts, faces, normals, UVs, colors. Modeling tools: Maya, Blender, Zbrush, Mudbox, Magica Voxel, assetforge.io, ProBuilder, UV Layout. Demo - Traditional modeling tricks **HW:** Hard surface model first pass	
	Demo - UV projections, unwrapping, texels, checker test. **HW:** Finalize Hard surface model/UV first pass	
9 10/23	Lecture - Surfacing: materials, lit, unlit, blend modes, textures (color, diffuse, albedo, metal, specular, rough, gloss, normal, bump, height, emission, detail), shaders. Surfacing tools: Photoshop, Substance, Surforge. LAB **HW**: Revisions/Finalize UVs	
	Demo - Substance Painter LAB **HW:** Revisions/Surfacing first pass	
10 10/30	Lecture - Lighting models, Blinn Phong, PBR, light types - point, directional, spot, area, realtime vs baked. Demo - indoor, outdoor, baking, shadows. **HW:** Finalize surfacing	
	Demo - integration, scale, materials, textures, lighting LAB **HW:** Revisions/Integration	
11 11/6	Demo - sculpting, retop **HW**: Organic model first pass	
	Demo - retop/UV unwrapping review LAB **HW:** Finalize organic model/retop/UVs	
12 11/13	Demo - simple rigging and animation for mechanical and organic shapes, integration **HW:** Rig and animate a model/integration	
	Demo - particles review, alt examples **HW:** Iterate	
13 11/20	LAB	
	Thanksgiving (No Class)	
14 11/27	Demo - props and crumbs **HW:** Iterate	
	Demo - postFX review **HW:** Iterate	
15 12/4	Demo as needed LAB **HW:** Polish	

	LAB **HW:** Publish	
16 12/10	**FINAL DUE!!!!!**	

Units of Study

1. **Working with media**
    - Overview of the various media types used in game production including: 2D, 3D, audio, animation, materials, textures.
    - Detailed information about media structure and formats.
2. **Authoring game-ready assets**
    - Demos of 2D and 3D asset creation and preparation for game use.
3. **Integration**
    - Importing and integrating game assets into a project.
    - Scene composition, camera setup, lighting, FX, post FX

Project 1: 2D scene

Create a layered 2D scene composition based on a theme/story of your choice (No memes, fan art, or replications of existing games/media). The scene should represent an important spawn point which communicates a strong sense of place and establishes context for beginning a level or segment.

You may create original assets and/or work with asset kits. Your choice will affect the final deliverables thusly:

- All original work: 1 scene
- Original work + asset kits: 2 unique scenes
- No original work (all asset kits): 3 unique scenes

References:

- Rules of Composition
- Environmental Storytelling
- Scene Depth and Layers
- Ori and the Blind Forest

Requirements:

- POV: 2D Platformer/Side Scroller in horizontal HD 1080. Fixed camera!
- Authored in a game engine (Unity or Unreal)
- 5 layers minimum (background, midground, foreground, plus intermediate layers)
- One (1) particle effect - smoke, fog, fire, sparks, rain, snow, insects, birds, etc.
- One (1) animated object - grass, tree, vegetation, machine, signage, etc.
- Looping ambient audio
- Post processing
- 30 second HD1080 video
- High res final images
- Full breakdown including:
    - 3D isometric view of layers (example)
    - Scene build-up: layers, FX, post FX

- Project images/video posted to ArtStation AND submitted through Canvas.

Process:

- Research/Ideation
- Comps (Photoshop or similar)
- Revisions
- Integration
- Revisions
- Iteration
- Polish
- Publish

Project 2: 3D diorama

Create a 3D diorama scene based on a theme/story of your choice (No memes, fan art, or replications of existing games/media). The scene should represent an important spawn point which communicates a strong sense of place and establishes context for beginning a level or segment.

You may create original assets and/or work with asset kits. Your choice will affect the final deliverables thusly:

- All original work: 1 scene
- Original work + asset kits: 2 unique scenes
- No original work (all asset kits): 3 unique scenes

References:

- Rules of Composition
- Environmental Storytelling
- Dioramas

Requirements:

- POV: 3D birdseye/turntable view in horizontal 16:9 layout.
- Authored in a game engine (Unity or Unreal)
- One (1) landscape/natural surface (hillside, shoreline, meadow, clearing, etc.)
    - Single low distortion UV, full PBR map set, appropriate poly count
- One (1) or more organic model(s) (tree, rock, plant, etc.)
    - Single low distortion UV, full PBR map set, appropriate poly count, baked normals from sculpt.
- One (1) or more hard surface model(s) (vehicle, building, machine, etc.)
    - Single low distortion UV, full PBR map set, appropriate poly count, baked normals from high poly.
- One (1) prop kit (min 3 props)
    - Atlased low distortion UV, full PBR map set, appropriate poly count
- One (1) particle effect - smoke, fog, fire, sparks, rain, snow, insects, birds, etc.
- One (1) animated object - grass, tree, vegetation, machine, signage, etc.
- One (1) emissive surface
- Detail “crumbs”
- Looping ambient audio
- Post processing
- 30 second HD1080 turntable video
- High res final images
- Full breakdown including:

    - 3 Images of final result from different angles.
    - Scene build-up: block-in, ground, primary elements, secondary elements, crumbs, FX, post FX
- Project images/video posted to ArtStation AND submitted through Canvas.

Process:

- Research/Ideation
- Block-in
- Asset creation
    - modeling
    - UVs
    - surfacing
- Integration
- Lighting
- Revisions
- Iteration
- Polish
- Publish

Class Attendance Policy

As detailed above, attending class during the scheduled meeting times earns professionalism credit. Credit is NOT earned for arriving late, leaving early, or failing to attend class meetings. If attending a scheduled class meeting is not possible, students are expected to promptly notify the instructor of extenuating circumstances.

Q Drop Policy

The State of Texas has enacted a law that limits the number of course drops for academic reasons to six (6). As stated in Senate Bill 1231:"Beginning with the fall 2007 academic term, an institution of higher education may not permit an undergraduate student a total of more than six dropped courses, including any course a transfer student has dropped at another institution of higher education, unless the student shows good cause for dropping more than that number."

University Attendance Policy: Religious Holy Days

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, I will give you an opportunity to complete the missed work within a reasonable time after the absence.

Documented Disability Statement

Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or 1-866-329-3986 (video phone). Faculty are not required to provide accommodations without an official accommodation letter from SSD. academic honesty University of Texas Honor Code The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Behavior Concerns Advice Line (BCAL)

If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit http://www.utexas.edu/safety/bcal.

Emergency Evacuation Policy

Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation: • Familiarize yourself with all exit doors of the classroom and the building. Remember that the nearest exit door may not be the one you used when you entered the building. • If you require assistance to evacuate, inform me in writing during the first week of class. • In the event of an evacuation, follow my instructions or those of class instructors. Do not re-enter a building unless you're

given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.

NOTES

Expanded terminology - integration into play test forms

- Was the core gameplay loop clear?