Game Development: Modding (OART-UT 1610)

INSTRUCTOR: Robert Yang <ry14@nyu.edu> // office hours by appointment
TA: Aaron Freedman <aefreedman@nyu.edu> 2 Metrotech, MAGNET. Room 830
LECTURE: Tuesday 9:30 am – 12:15 pm // WORKSHOP + LAB: Thursday 9:30 am - 12:15 pm

DESCRIPTION
In this course, students get practice building game play experiences through a series of short-cycle exercises. Students will create and tune gaming experiences in a range of game genres, using Unity3D. The course introduces students to production roles, playtesting, considerations of audience and platform, and other practical concerns in building games.

>>> At the completion of this course, the student will be able to:
1) Describe typical work practice in game development.
2) Discuss their experience in producing short gameplay experiences using a game engine.
3) Demonstrate competency in game production through a series of exercises.
4) Work with a game engine, and understand the basics of how to build a game in the engine.

YOU WILL NEED:
- A laptop, and/or someway to save work if you use lab computers.
- **Unity3D**, free indie version. ("Pro" is okay too, but not necessary at all.)
- **Autodesk Maya** (Autodesk offers free 3 year licenses to students)
- **Adobe Photoshop** (Adobe recently made its entire CS2 suite free.)
- **Github for Windows / Github for Mac.** (or you can use whichever Git client you prefer)

WE WILL READ: (I'll provide PDF excerpts, but you can buy these books if you like.)
- **10PRINT,** by Nick Montfort, Ian Bogost, et al. *The philosophy of code and expression.*
- **Game Feel,** by Steve Swink. *The art and science of game input and perception.*

LEARNING GOALS: "learn everything"
- Unity editor interface and common workflows.
- Iterative prototyping processes and troubleshooting, isolating bugs and problems.
- C# syntax, input and control structures (if / else / for / while), basic code patterns.
- Conceptualizing 3D space / raycasting / basic vector math.
- Maya, basic polygonal modeling / texturing / animation workflows and considerations.
- Photoshop, basic texture painting considerations, color theory, texture as data.
- Audacity, basic sound mixing /editing / synthesis workflows, sound design considerations

CLASS ASSIGNMENTS
- WEEKLY HOMEWORK / LABS. Do them.
- LUDUM DARE: Make a game in 48 hours.
- MIDTERM EXAM: on 10PRINT / Unity C#
- FINAL: 5 week group project, full game

CLASS WEBSITE: github.com/radiatoryang/modding_fall2013
TO TURN-IN HOMEWORK:
Click "wiki" on the Github repo page, and edit the HW page. Upload and link TWO (2) things:
1) A link to a **Unity webplayer .HTML**
2) A link to **your project folder** hosted on a public Git repository.

Late individual work is accepted, but you will be penalized a grade level and receive no feedback.

	TUESDAY (LECTURE / DISCUSSION)	THURSDAY (WORKSHOP / LAB)	HOMEWORK (DUE NEXT WEEK, TUES.)
1 Sep 3	Welcome / intro to Unity 3D space, colors, textures. My first build.	Intro to code, Phys coding. Blockly maze. Hello World. Input. Git + source control.	- Sculpt a terrain in Unity. - (Lab) Finish guesser game. - Read 10PRINT, Ch. 10 + 15
2 Sep 10	Tuning and balancing. Vector math. Movement. Maya workflow, modeling.	GetComponent, lights, Sound. Visualize time, sine Music Video Lab.	- Make a building in Maya. - (Lab) Make a music video. - Read 10PRINT, Ch. 20
3 Sep 17	Physics! Colliders, triggers, rigidbodies, physic mats. Layers, tags. Prefabs.	Instantiation / spawning. Vector math + AddForce. Golf Lab.	- Finish Goldberg machine. - (Lab) Finish golf course. - Read 10PRINT, Ch. 25
4 Sep 24	Fish Lab: prototyping, modeling and texturing. for() loops + instantiation	Fish Lab: rig + animating. Animating with code. Porting Lab.	- Finish swimming proto - (Lab) Bling 10PRINT port - Read 10PRINT, Ch. 35
5 Oct 1	"Being in the World." pt. 1 The joy of raycasting.	*(INDIECADE)* Procedural generation.	- (Lab) Finish roguelike/runner - Read 10PRINT, Ch. 40
6 Oct 8	"Being in the World." pt. 2 **START LUDUM DARE**	Consulting and playtesting **END LUDUM DARE**	- Finish / release LD publicly - Review for midterm exam
7 Oct 15	**HOLIDAY (FALL RECESS)** **NO CLASS**	Review for midterm. **TAKE MIDTERM EXAM.**	- Relax. - Read Game Feel, Ch. 1, 13
8 Oct 22	Tuning, "juiciness" / bling. Sound design. Coroutines.	Screen shake, particles... Water Lab: mesh deform	- Finish boat racing game - Read Game Feel, Ch. 8-9
9 Oct 29	Texture painting, as data World building, storytelling	Engineering emergence The component model	- Finish room escape - Read Game Feel, Ch. 7
10 Nov 5	Input / control tuning. Scrum, Cabal, Sourcetree FINAL PROJECT: form team	AnimCurve as InputCurve Consulting and playtesting *> Open workshop time.*	- Final: Refine team protos - Read Game Feel, Ch. 2
11 Nov 12	> What you need to learn. Consulting and playtesting	PROJECT / CODE REVIEW. *> Open workshop time.*	- Final: Toy / systems proto
12 Nov 19	> What you need to learn. Consulting and playtesting	PROJECT / CODE REVIEW. *> Open workshop time.*	- Final: Systems complete
13 Nov 26	> What you need to learn. Consulting and playtesting	**THANKSGIVING** **NO CLASS**	- Final: Content complete
14 Dec 3	> What you need to learn. Consulting and playtesting.	PROJECT / CODE REVIEW. *> Open workshop time.*	**- Final: MAKE IT WORK!!!**
15 Dec 10	Consulting and playtesting. *> Open workshop time.*	Arcade, playtest, pizza. Notes on virtual reality.	- Release your final publicly

ASSESSMENT

Students will be graded primarily on demonstrated process and technique. Students will be given grades based on a 100-point scale. Each assignment will be graded on a point scale, and these points will be added up to determine the final grade, according to the following:

98-100 A+
92-97 A
90-91 A-
88-89 B+
82-87 B
etc.

The following are the components of the grade:

Attendance & participation	20
Homework	20
Midterm: Ludum Dare	10
Midterm: Exam	15
Final: Alpha milestone	10
Final: Gold milestone	25
TOTAL	= 100

- Late individual work is accepted with penalties / no feedback.
- Late group work is NOT accepted.

Attendance & Participation
The attendance and participation portion of your grade is based on the following:

- Your attendance in class and tardiness. Missing more than 2 classes will hurt your grade.
- Participation in group discussions and critiques
- Peer grades and participation in writing group evaluations

Private peer grades
You'll give a grade to each member of your group. You can add a short explanation if you like, and you must add some explanation when giving a grade of C or below.

A = Fully participated and contributed ideas - hard worker and great teammate
B = Generally was present during the process - no complaints
C = Attended some meetings, but could have contributed more
D = Was absent from most or all meetings, or counter-productive in some way
F = Completely absent from the process

Group evaluations
Students will also write an evaluation of each team member at each milestone. These evaluations will be sent to all group members and to the instructor. They must include:
a) Two positive observations. Particular skills, behaviors, decisions, or other ways in which a member made a positive contribution. Each observation should be written in a few sentences.
b) Two areas for improvement. At least two observations that point out how the team member can change their working style, collaborative approach, or other aspects of their behavior to improve the project and the team dynamic.

Tips for Working Successfully in a Group

From the Building Virtual Worlds class at Carnegie Melon's ETC Program

Meet people properly. It all starts with the introduction. Then, exchange contact information, and make sure you know how to pronounce everyone's names. Exchange phone #s, and find out what hours are acceptable to call during.

Find things you have in common. You can almost always find something in common with another person, and starting from that baseline, it's much easier to then address issues where you have differences. This is why cities like professional sports teams, which are socially galvanizing forces that cut across boundaries of race and wealth. If nothing else, you probably have in common things like the weather.

Make meeting conditions good. Have a large surface to write on, make sure the room is quiet and warm enough, and that there aren't lots of distractions. Make sure no one is hungry, cold, or tired. Meet over a meal if you can; food softens a meeting. That's why they "do lunch" in Hollywood.

Let everyone talk. Even if you think what they're saying is stupid. Cutting someone off is rude, and not worth whatever small time gain you might make. Don't finish someone's sentences for him or her; they can do it for themselves. And remember: talking louder or faster doesn't make your idea any better. Check your egos at the door. When you discuss ideas, immediately label them and write them down. The labels should be descriptive of the idea, not the originator: "the troll bridge story," not "Jane's story."

Praise each other. Find something nice to say, even if it's a stretch. Even the worst of ideas has a silver lining inside it, if you just look hard enough. Focus on the good, praise it, and then raise any objections or concerns you have about the rest of it.

Put it in writing. Always write down who is responsible for what, by when. Be concrete. Arrange meetings by email, and establish accountability. Never assume that someone's roommate will deliver a phone message. Also, remember that "politics is when you have more than 2 people" – with that in mind, always CC (carbon copy) any piece of email within the group, or to me, to all members of the group. This rule should never be violated; don't try to guess what your group mates might or might not want to hear about.

Be open and honest. Talk with your group members if there's a problem, and talk with me if you think you need help. The whole point of this course is that it's tough to work across cultures. If we all go into it knowing that's an issue, we should be comfortable discussing problems when they arise -- after all, that's what this course is really about. Be forgiving when people make mistakes, but don't be afraid to raise the issues when they come up.

Avoid conflict at all costs. When stress occurs and tempers flare, take a short break. Clear your heads, apologize, and take another stab at it. Apologize for upsetting your peers, even if you think someone else was primarily at fault; the goal is to work together, not start a legal battle over whose transgressions were worse. It takes two to have an argument, so be the peacemaker.

Phrase alternatives as questions. Instead of "I think we should do A, not B," try "What if we did A, instead of B?" That allows people to offer comments, rather than defend one choice.