

NYU | Tisch School of the Arts | NYU Game Center

GAMES-UT 213

Music and Gameplay

Spring 2020

4 Credits

Schedule/Room: Monday 10-12:45, 370 Jay Street Room 312

Office Hours: Thursday 10-noon, 6th floor Adjunct Area

Instructor: Corey Bertelsen

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Course Description

Music and Gameplay is an intensive course concerned with games in which the gameplay is fundamentally influenced by or oriented around a musical system. In this course, students will engage with music games in a variety of ways, through critical play, design practice, and hands-on development. This multifaceted approach will foster a deep understanding of how interactive mechanics can be linked to music.

Throughout the course, we'll be drawing inspiration from a variety of music games across 3 major categories:

Sound Toys:

Sound toys are undirected or quasi-directed “playful instruments” that can enable the player to create or compose music.

Examples: ElectroPlankton, Thicket, Seaquence

Rhythm Games:

In rhythm games, player input is measured against the rhythm of a pre-existing musical piece. Success depends on the player's dexterity and timing.

Examples: Rockband, Dance Dance Revolution, Elite Beat Agents

Synesthesia Games:

A catch-all category for games in which musical content has a direct impact on gameplay, but which does not require beat-matched rhythmic timing (as in Rhythm Games), nor necessarily affords player-directed composition (as with Sounds Toys).

Examples: Rez, Sound Shapes, Fract OSC

Course Objectives

At the end of this course, students will be able to:

- Understand the history and design evolution of music games
- Develop prototypes for sound toys and rhythm games.
- Identify the various feedback, control, and UI designs used in music games
- Incorporate audio reactive visual “juice” into gameplay projects
- Construct levels and challenges from musical data files
- Create music-driven gameplay with a unique theme or artistic voice

Course Format

Music and Gameplay focuses on project-based learning. Weekly meetings consist of a three-hour lecture class, which will consist of demos, lectures, critical play, listening exercises & critical feedback sessions.

Note that this Syllabus is intended as an outline, and is subject to change.

Check the class Slack and Github for up-to-date information and any syllabus revisions.

Prerequisites

The following courses are required as prerequisites:

Intermediate Game Development or equivalent Unity/C# experience.

Audio for Digital Games, Game Audio 1 (Steinhardt class), or equivalent digital audio knowledge (synthesis, sound editing, DAW's and game audio integration). Knowledge of MIDI is helpful.

Students should be familiar with Unity or another contemporary 3D game engine & capable of scripting. Knowledge of Coroutines, Event Systems, and general game audio (Audio Sources, Spatialization, Attenuation curves, etc) is assumed. Students who have completed an introductory digital studio class will be adequately prepared. Other students may join at the professor's discretion.

This class may require some musical composition. It's expected that students are able to compose some music in a Digital Audio Workstation, or will work in groups with those who are.

Attendance

Attending and arriving on time to all class sessions is required and expected. This includes all labs, recitations, and critiques. If you will be missing a class due to illness, or unavoidable personal circumstances, you must notify your professor in advance via email for the absence to be excused.

Unexcused absences and being late to class will lower your final grade. Three unexcused absences lower your final grade by a letter. Each subsequent unexcused absence will lower

another letter grade. Two tardies will count as one unexcused absence. Arriving more than 15 minutes late to class will also count as an unexcused absence.

Accessibility

Academic accommodations are available for students with documented disabilities. Please contact the Moses Center for Students with Disabilities at 212 998-4980 for further information.

Counseling and Wellness

Your health and safety are a priority at NYU. If you experience any health or mental health issues during this course, we encourage you to utilize the support services of the 24/7 NYU Wellness Exchange 212-443-9999. Also, all students who may require an academic accommodation due to a qualified disability, physical or mental, please register with the Moses Center 212-998-4980. Please let your instructor know if you need help connecting to these resources.

Grading

Assignments students complete will be evaluated with special attention paid to:

Comprehension & Application - Does the assignment reflect an understanding of the concepts covered in class? Does it follow rules or guidelines outlined in class? If not, does it intentionally & meaningfully subvert these rules?

Musical Incorporation - Does the assignment make use of music to inform design decisions? Are visual elements cohesive with the music? If the music has lyrics, how are they represented or contextualized?

Technical Application - Can the assignment be played? If precision or challenge is a component, does the challenge feel “fair”?

Creativity - Does the work represent a unique perspective? Is it innovative & unique either in its execution or juxtaposition?

Introduction prototype assignments will be evaluated on a Pass/Partial/Fail basis, according to the following criteria:

Full credit (100%) if a functional interactive prototype is delivered by the due date (or later, with a pre-approved extension);

Partial credit (70%) if a prototype is delivered late without an extension, or if the prototype cannot be evaluated due to technical issues.

No credit (0%) if the prototype is not delivered.

Grade Calculation

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:

92-100 A

90-91	A-
88-89	B+
82-87	B
etc.	

The following are the components of the grade:

20% Participation & In-class preparedness

5% Sound Toy Prototype 1, graded Pass/Partial/Fail.

5% Sound Toy Prototype 2, graded Pass/Partial/Fail.

5% Alt Control Sound Toy, graded Pass/Partial/Fail

5% Rhythm Game Prototype part 1, graded Pass/Partial/Fail.

5% Rhythm Game Prototype part 2, graded Pass/Partial/Fail.

5% “Musicify” a game, graded Pass/Partial/Fail

25% Midterm Project, graded A-F.

25% Final Project, graded A-F.

Small prototypes and class discussion based around critical reading/playing will form the bulk of assignments during the first few weeks. Starting on Week 4, students will begin work on a larger midterm game project that aims to intertwine music and gameplay.

It's expected that students will enter the class with more experience in one of the applicable sub-disciplines of game development (programming, visual design, music composition, etc). Students are encouraged to work in groups of 2-4 on the prototyping exercises, midterm and final.

Before the midterm, we will learn the technical side of implementing “Beat Matching” rhythm game mechanics into gameplay. Later in the course, we will discuss and prototype music games with motion controls, VR, and AR.

The course will culminate in a final project. This can be an extension of the midterm assignment, or a new project. The only requirement for the final project is that music informs gameplay in a fundamental, inextricable way. As music is a performative medium, our final class will be a performance of our new games.

Schedule

Week 1 : Jan 27 - Defining Music Games

- Music game history part 1
- Sound toys and playful composition techniques: Brian Eno, Toshio Iwaii, Teenage Engineering
- Otocky, SimTones, early sound toys, and interactive game music systems.

Assignment

Listening - Cobra by John Zorn

Prototyping - Given an example project, begin making a simple sound toy prototype where sound and music are the core feedback mechanisms, but where there is no directed goal.

Week 2 : Feb 3 - Sound Toys

- Synthesis Basics
- Design patterns for music-making games vs playful instruments
- Discussion about Thicket, Electroplankton, Patatap
- Using samples vs in-game audio synthesis in Unity

Assignment

Prototyping: Expand the sound toy prototype, with in-engine synthesis if you wish. Expand the connections between sonic content, theming, and input. Consider using touch screens or controllers if you're comfortable with those.

Week 3 : Feb 10 - Synthesis and Sound Toys 2

- Adding Tweens and Visual Juice
- Working with Musical Time - keeping things synchronized
- Control surfaces and MIDI inputs
- Demo: Using the Clock Script to synchronize things to musical time

Assignment

Prototyping: Use an alternative control method for one of your sound toy prototypes (or make a third one). This could be a Makey Makey, a gamepad, wii mote, MIDI Controller, or just using your keyboard in an unconventional way!

NO CLASS FEB 17 - President's Day

Week 4 : Feb 24 - Rhythm games 1

- Design patterns and UI evolution of rhythm games
- Simon Says, Parappa the Rapper, Japanese Arcade Games
- Basic time synchronization and programming for rhythm games (using Clock script or similar)

Assignment

Playing: Rock Band or Rhythm Heaven

Prototyping: Create a basic game that requires rhythmic input. Consider how the beat is going to be indicated, how the player is going to be scored, and what kind of theming you're going to use

Week 5 : Mar 2 - Rhythm games 2

- Controller peripherals and theming in rhythm games
- Rock Band, Rhythm Heaven and Thumper
- Review of prototypes, do they feel "fair"?
- Technical Demo -Beatmaps and music game level editing

Assignment

Playing: Rez

Prototyping: Revise your prototype from week 4. Either create a level or adjust the game arc to add some kind of difficulty curve. Revise the theming and visuals

Week 6 : Mar. 9 - Audio Reactivity

- Audio Data and Audio Spectrum Data - what they tell you, and how to use them
- Technical Demo - using FFT data to create audio reactive animations
- Introducing the Midterm

Assignment

Playing: A music visualizer of your choosing (web-based, iTunes WinApp, etc)

Developing: You can work solo, or in groups of 2-3, to begin developing your midterm. You can either work from scratch or from a previous prototype.

NO CLASS MAR 16 - SPRING BREAK

Week 7 : Mar. 23 - Synesthetic Games

- Music-informed gameplay on a broader scale
- Rez, SoundShapes, Fract OSC, Panoramical

Assignment

Playing: Dance Central

Developing: Work on Midterms

Week 8 : Mar 30 - Mid Term Critique

Assignment

Work on Midterms!

Week 9 : Apr 6 - Synesthetic Games 2

- Interactive Music Videos (3 Dreams of Black, Pale Machine, Bjork)
- Player control, and choreographing visual changes to a song
- In Unity - Taking an existing game and making the audio-visual feedback into a musical system

Assignment

"Musicify" an existing game. I'll provide three potential games - take one of these and use the tools we've used to make it into a music game.

Week 10 : Apr 13 - Peripherals and Arcade Controllers

- When, why and how music games use custom controllers
- The guitar hero controller and instrument abstraction
- Discussion of how the Rock Band Controllers were made

Assignment

Consider your final project - would it work well with some kind of physical peripheral? Make a diagram of a device that would suit your gameplay.

Week 11 : Apr. 20 - VR and Motion Controls

- Fantasia Music Evolved, Dance Central, Rock Band VR, Audica, Beat Saber
- Approaches to adapting beat-matched gameplay to motion controls
- Case studies from Carnegie Mellon's research team

Assignment

Make sure your game is ready to playtest in class next week

Week 12 : Apr 27 - Music Game Futures - Social Spaces and Augmented Reality

- The Wave VR, PixelJunk 4AM and shared performance spaces
- Lyra VR, EXA, and VR Digital Audio Workstations
- AR Audio Apps
- Limitations and possibilities of AR/VR

Assignment

Revise your final projects based on playtester feedback

Week 13 : May 6 - Final Feedback;

- This week is reserved for dedicated work time, as well as focused critique, technical help, and playtesting of the final projects

Work on Finals!

TBD - We are arranging a gallery show/performance to be held during this week. It will likely be just before, or the Friday after, our final critique

Week 14 : May 11 - Final Critique

- Presenting our music games!
- Discussion/Feedback about the class

Final Assignment Due