

**NYU | Tisch School of the Arts | NYU Game Center**

**GAMES-UT 213**

# **Music and Gameplay**

***Mid-March addendum --***

***changes marked in blue italics***

**Spring 2020**

**4 Credits**

**Schedule/Room: Monday 10-12:45, *Zoom Meeting: <https://nyu.zoom.us/j/290850168>***

***Open work hours: Monday 2 pm - 4 pm***

***Thursday 2 pm - 4 pm***

**Office Hours: Thursday 10-noon, *Zoom Meeting: <https://nyu.zoom.us/j/899290917>***

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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.

## ***The Times, They Are a Changin'***

The Covid 19 epidemic has upended all of our lives; this is a time of global challenge and overall weirdness. Fortunately, thanks to modern technology (and hopefully a stable internet connection), we can proceed with minimal disruptions. Unfortunately, it means that your proximity to peers and access to facilities - two of the biggest benefits to being at a University - is suspended.

To try to compensate for this, I'm introducing “Open Work Hours,” which is an additional 4 hours a week. I will be sharing my screen as I work on music games - sometimes class examples, sometimes my own projects. Students are free to drop in and ask questions about my process, about their own work, or we can break out into 1-on-1 time.

I encourage you to seek out other Virtual co-working solutions, or to host your own. For example, Babycastles art gallery has been holding virtual co-working on Mondays from 5 pm - 10 pm

**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

The policy on absences has not changed with the remote working set up. To clarify, attendance implies that you are **on camera**. Just like during class - you can get up, take bathroom breaks, etc at your leisure, and briefly disable camera when doing so. But I prefer that you remain on camera when possible.

Send me a message over slack if you'd prefer not to be on camera, or have issues with your audio-visual set up.

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% Sound Toy Prototype 3, 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

- Music Theory Review
- 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 - Rhythm Games 3**

- Critique of our rhythm games - what could we do differently?
- Adding beat-synchronized animations
- Alternate Tools/Plugins - Koreographer, FMOD Studio
- Alternate Controls and Input Devices

### *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 - **Post-PAUSE Re-orientation, Synesthetic Games**

- Take a deep breath in
- Exhale
- Things are going to be ok
- **Playing Viewing** Rez, SoundShapes, Fract OSC, Sayonara Wild Hearts and others

### *Assignment*

Developing: Work on Midterms, [watch Fantasia](#) (preferably the original, but Fantasia 2000 is ok) or [Allegro non Troppo](#)

## Week 8 : Mar 30 - **Synesthetics 2 - music visualization**

- *Check-In on midterm projects*
- *Music Visualizers and Interactive Music Videos (3 Dreams of Black, Pale Machine, Bjork)*
- *Unity Tutorial - Using Audio Data to drive animations*

### *Assignment*

Developing: Work on Midterms

## Week 9 : Apr 6 - **Mid Term Critique**

- Mid-Term Critiques and Self Evaluation
- In Unity - Taking an existing game and turning the audio-visual feedback into a musical system

### *Assignment*

Developing: Music-ify an existing game - adapt a non-musical game into a musical experience by changing timings of events and audio-visual feedback



## **Week 10 : Apr 13 - Alt Controls and Custom Controllers**

- [Introducing the final project](#)
- Guest - Matt Boch
- 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*

Begin work on the final project

## **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!*

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~~ TBD, probably during the summer.

## **Week 14 : May 11 - Final Critique**

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

### **Final Assignment Due**