Computer game development and design

Jaanus Jaggo

2019
About me

Software Engineering Assistant since 2016

Teaching:
- Computer Graphics
- Computer Game Development and Design

Main focus
- Modern technologies
- Procedural generation
- Art creation workflows
- Visual effects
About me

- Indie game development history -> a lot of unfinished games, but some are finished

My finished games:
About me

- Tribocalypse VR - VR bow shooting game (Team of 10 people)

https://store.steampowered.com/app/520510/Tribocalypse_VR/
About me

- Ground Forge - mobile exploration and crafting game (Team of 2)

About me

- Hülgejaht - game made for Tallinn Zoo polarium

About me

- Unfortunately most of my cooler projects are unfinished
About me

- Latest project - Dwarf Block (not finished)

https://www.dwarfblock.com/
Today’s topics

● Study goals
● Course organization
● Lectures, labs and project
● Introduction to game design
● Unique Selling Proposition (USP)
● First homework assignment
● Group task
Why should you take this course?

● You want to learn to make games?
Why should you take this course?

● You want to learn to make games?
● You are already making games but want to do it better?
Why should you take this course?

- You want to learn to make games?
- You are already making games but want to do it better?
- You want to take an easy course?
Why should you take this course?

- You want to learn to make games?
- You are already making games but want to do it better?
- You want to take an easy course?
- You want to distinguish a good game design?
Why should you take this course?

- You want to learn to make games?
- You are already making games but want to do it better?
- You want to take an easy course?
- You want to distinguish a good game design?
- You want to make your dream game?
Why should you take this course?

- You want to learn to make games?
- You are already making games but want to do it better?
- You want to take an easy course?
- You want to distinguish a good game design?
- You want to make your dream game?
- You want to make a full game in a team?
- You want to play games?
Why should you take this course?

- You want to learn to make games?
- You are already making games but want to do it better?
- You want to take an easy course?
- You want to distinguish a good game design?
- You want to make your dream game?
- You want to make a full game in a team?
- You want to play games?

Yes you can, but only other student games and you have to write a review!
What you will learn

1. Game design theory
What you will learn

1. Game design theory
2. Game dev in Unity GE (C# language)
What you will learn

1. Game design theory
2. Game dev in Unity GE (C# language)
3. Game dev techniques and technologies
What you will learn

1. Game design theory
2. Game dev in Unity GE (C# language)
3. Game dev techniques and technologies
4. Game dev project management
Unfortunately it is hard work
Organization

6 EAP = 156h of work

Lectures: 15 * 1.5h = 22.5h

Labs: 15 * 1.5h = 22.5h

Homework: 20h

Projects: 91h

All the information:
https://courses.cs.ut.ee/2018/gamedev/fall/Main/HomePage
Grading

Some lectures give points: 10 points total

Solve tasks: 30 points (deadline 1 week, first task given today)

Complete project (2-3 persons): 60 points

- Project milestone 1 (October)
- Project milestone 2 (November)
- Project milestone 3 (January)

Game jam bonus: 5 points (Granted only once)

- Ludum Dare 45 - October 4th
  - https://ldjam.com/

91+ = A, 81-90 = B, 71-80 = C etc.
Projects

Rules

- 3 students in group
- **No** extensive violence or improper material
- Milestones with **deadlines**
- Mandatory **presentations**
- **Requirements** in courses
- You can use any asset that you have right to use (properly credited)

Inspiration:

DayDream

Fort Master
Schedule

15 lectures
15 practice sessions
1 project

We are here!  Design Document  Presentation  Milestone 1  Presentation  Milestone 2  Presentation  Final Presentation

September  October  November  December  January
Course Discord Server

- Find teammates
- Ask help
- Help other students
- Game dev related discussion

Join Discord now if you haven’t done it yet!

Invitation link: https://discord.gg/P4WVGgm
Lectures

- 02.09: Introduction *(HW 2p)*
- 09.09: Gameplay *(HW 2p)*
- 16.09: Game Mechanics *(HW 2p)*
- 23.09: Preproduction
- 30.09: Design Document Presentations
- 07.10: Graphics
- 14.10: Gamedev Lifecycle & UI Design
- 21.10: Polishing
- 28.10: Milestone 1 presentations
- 04.11: Animations
- 11.11: Sound Design
- 18.11: Level Design
- 25.11: Milestone 2 presentations
- 02.12: Modern Technologies
- 09.12: Procedural Generation
- 16.12: Marketing
- January TBA: Final presentation

**Bold** lectures are your presentations. (at least 2 person per team has to be present)

Participating in non-bold lectures will give 1 point (up to 10).

Game Design Homeworks

- 1 week deadline (next Monday before the lecture)
- Up to 24h late -> 50% score penalty
- Submitted through Courses
Gameplay
Game mechanics

Aesthetics

Dynamics

Mechanics
Preproduction
Graphics design, graphics pipeline

Game dev Lifecycle and UI design
Polishing

Orcs Must Die Unchained
Animations
Sound Design
Level design
Modern technologies
Procedural generation
Marketing

Labs

**Group 2** - Wednesday 12pm - 14pm,
Liivi 2 room 003 (computer class with 15 seats)

**Group 1** - Wednesday 14pm - 16pm,
Liivi 2 room 206 (regular class with 25 seats)

Preparing for labs: [https://courses.cs.ut.ee/2019/gamedev/fall/Main/Labs](https://courses.cs.ut.ee/2019/gamedev/fall/Main/Labs)
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>04.09</td>
<td>&quot;Introduction to Unity&quot; (Bird Game)</td>
<td>2p</td>
</tr>
<tr>
<td>11.09</td>
<td>&quot;3D game&quot;</td>
<td>2p</td>
</tr>
<tr>
<td>18.09</td>
<td>&quot;Space Game&quot;</td>
<td>1</td>
</tr>
<tr>
<td>15.09</td>
<td>&quot;Space Game&quot; 2</td>
<td>4p</td>
</tr>
<tr>
<td>02.10</td>
<td>&quot;Project architecture and Setup&quot;</td>
<td></td>
</tr>
<tr>
<td>09.10</td>
<td>&quot;Tower Defence Game 1&quot;</td>
<td></td>
</tr>
<tr>
<td>16.10</td>
<td>&quot;Tower Defence Game 2&quot;</td>
<td></td>
</tr>
<tr>
<td>23.10</td>
<td>&quot;Tower Defence Game 3&quot;</td>
<td>6p</td>
</tr>
<tr>
<td>30.10</td>
<td>&quot;3D Graphics in Blender&quot;</td>
<td>1p</td>
</tr>
<tr>
<td>06.11</td>
<td>&quot;Animations&quot;</td>
<td>2p</td>
</tr>
<tr>
<td>13.11</td>
<td>&quot;Audio Modification and Integration&quot;</td>
<td>2p</td>
</tr>
<tr>
<td>20.11</td>
<td>&quot;Level Design&quot;</td>
<td>2p</td>
</tr>
<tr>
<td>27.11</td>
<td>&quot;Editor Scripting&quot;</td>
<td>1p</td>
</tr>
<tr>
<td>04.12</td>
<td>&quot;3D Lighting &amp; Advanced Effects&quot;</td>
<td>1p</td>
</tr>
<tr>
<td>11.12</td>
<td>&quot;Procedural Generation&quot;</td>
<td>1p</td>
</tr>
<tr>
<td>18.12</td>
<td>&quot;VR Game Design&quot;</td>
<td></td>
</tr>
</tbody>
</table>

- ""Introduction to Unity" (Bird Game)
- "3D game"
- "Space Game"
- "Space Game" 2
- "Project architecture and Setup"
- "Tower Defence Game 1"
- "Tower Defence Game 2"
- "Tower Defence Game 3"
- "3D Graphics in Blender"
- "Animations"
- "Audio Modification and Integration"
- "Level Design"
- "Editor Scripting"
- "3D Lighting & Advanced Effects"
- "Procedural Generation"
- "VR Game Design" - CGVR Lab Excursion
Any questions about the course organization?
Introduction to game design
Gameplay

**Gameplay** - interactivity that the game induces. How player interact with the game and how game world reacts to the choices.

In SimCity, the gameplay is *laying out* a city and *observing* the citizens that start to inhabit it.
Game Design

Game Design - determines the form of gameplay.
Game Designer

Game Designer - is the person who designs the game, thereby establishing the shape and nature of the gameplay.

Source: https://www.gamedesigning.org/career/lead-game-designer/
Unique Selling Point (USP)

Current game market is crazy

What makes people want to buy YOUR GAME?

On average 24.7 games per day

Source: Steam Spy and Grid Sage Games
Bad USP

- Permanent death
- Magical skills
- Character leveling
- Good story
- Good graphics

None of these things set your game apart. There are just so many games with these things.
18 quintillion unique planets to explore.
Good USP

Create your own siegecraft to and blow things up!
Good USP

Time only moves when you move!
Good USP

Ocean is an interesting but scary place to explore.
Good USP

Balance yourself on high speed moving trucks!
Unique Selling Proposition

- What you do well
- What the consumer wants
- What your competitor does well

Source: [https://landerapp.com/blog/unique-selling-proposition/](https://landerapp.com/blog/unique-selling-proposition/)
Brainstorming

- **Technique 1** - choose a side activity of a big game and make a new game out of it.

Like Skyrim but you are only doing alchemy!
Brainstorming

- **Technique 1** - choose a side activity of a big game and make a new game out of it.
- **Technique 2** - think of an existing game, but change something significant.

Real time strategy game **BUT** all sectors are circles

Circle Empires (2018)
Brainstorming

- **Technique 1** - choose a side activity of a big game and make a new game out of it.
- **Technique 2** - think of an existing game, but change something significant.
- **Technique 3** - one game meets another. Take the core gameplay of two totally different games and combine them into something new.

Football Meets Crossy Road?
Football Meets Crossy Road

Source: https://gadgets.ndtv.com/apps/features/one-more-pass-is-where-football-meets-crossy-road-841545
Homework 1 - Brainstorming

Watch the video: How to Choose a Theme for Your Game (5m 24s)

https://youtu.be/R_sear6P058

You will have to brainstorm 3 game ideas, using 3 previous techniques. For each game idea you have to specify the USP (with one sentence) and find an illustrative picture.

Submit: PDF document in Courses

Deadline: next monday at 14.15 (before the lecture)
Homework 1 - Brainstorming

Example

Game 1: “Indian Taxy Driver”
● **USP:** Drive a taxi in crazy Indian traffic.

New Delhi, India on 11/11/2017 © travelwild / Shutterstock
Homework 1 - Brainstorming

Example

Game 2: “Witch Apprentice”
  ● **USP**: Create strange potions while knowing nothing about it.

Artist: Dan Hammonds
Group task

Form groups of 3 to 4 people.

1. Each person chooses one of their favourite game, or game they recently played.
2. Determine the USP of this game, tell it to others and let them guess what game it is.
What you learned today

- How to pass this course and get a good grade
- What topics will be coming
- What is Gameplay and Game Design
- What is USP and how to differentiate between good and bad USP
- 3 game brainstorming tips

Please leave feedback: https://forms.gle/Ji7RuaWxp7H16wubA
(you don’t have to answer all the questions)
Next lecture - Gameplay

What makes games fun?

How to define your gameplay?

Gameplay based on game genre.