

# What is this course?

Fundamentals of Game Development

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# Welcome to Fundamental of Game Development Course!

- In this course, we are trying to learn what the game is and how we can develop the games.
- You have 3 unit main course + 1 unit laboratory course.
- Due to this reason, in this class, we cover academic issues and unity engine learning.
- Every week, we decide about holding the laboratory class depends on the situation, but by default, we won't hold this class.



# Welcome to Fundamental of Game Development Course!

- We don't have TA class, but instead, you must download and watch “Udemy - Complete C# Unity Developer 2D Learn to Code Making Games”.
- Every week, we determine which part of this video that you must watch and we expect you will know about them for the next week.
- We have unity questions in the final and midterm exam from what we say in the class.
- But we don't ask questions from the videos.
- in the final project, prototype and homework, we expect you use the techniques that you learned from the videos.

# Topics that we will cover in this course

- Introduction to computer game genres
  - We will consider the famous genres of video games from a game designer perspective
    - Action
    - Adventure
    - RPG
    - Sport
    - RTS
    - Platformer
    - And so on



# Topics that we will cover in this course

- Introduction to computer game development pipeline
  - Pre production Phase
  - Production Phase
  - Post Production Phase
- You guys will get familiar with the whole process of building a game.
- The Roles that are involved (or needed) for creating a computer game
- The documents that you should generate along the way

# Topics that we will cover in this course

- Introduction to game engine architecture
  - The understanding of “Game Loop”.
  - Components needed for a game engine
    - The update Routine
    - The rendering Routine
- Introduction to graphics pipeline
  - So many things to cover in this area! We will make things short if our remaining time is limited.
- Things that we will cover in this section are
  - Introduction to fundamentals of 3D graphics
  - Graphics Pipeline



# Topics that we will cover in this course

- Introduction to 2D game Development Algorithms
  - Different types of algorithms for different kinds of 2D games
    - Screen based
    - Tiled environment
    - Parallax games
    - Isometric 2D games
    - Scrollers
- Introduction to Physics for computer games
  - The understanding of some important issues in computer game physics

# Topics that we will cover in this course

- Introduction to Artificial Intelligence for computer games
  - Path Finding
    - A\*
    - Navigation Mesh
    - And so on



# Topics that we will cover in this course

- Introduction to Unity game development
  - Why we use engine?
  - How does unity engine work?
  - Programming in unity engine.
  - Creating menu for your games.
  - Using assets (image,3d model, audio, and so on) in the games.
  - Using software engineering techniques for developing games.
  - Some of the useful architectures that companies use in their games.

# Teaching structure

- The Main class includes Academic and Unity information.
- You must watch the tutorial every week instead of TA class.
- The midterm exam is up to the end of season 7 GDD.
- Topics of the midterm will be removed for the final exam.
- Despite midterm and final exam, you have:
  - 3 Unity homework.
  - Writing GDD of your final project game.
  - Developing a prototype of your final project game.
  - Final project.
  - Seminars.



# Time scheduling and deadlines

- Midterm: 11 Aban 1399
- GDD deadline: 23 Aban 1399
- Prototype deadline: 14 Azar 1399
- Seminars: Last week of azar
- Final project: One week before score lock
- Homework (3): 9 Aban, 30 Aban, 28 Azar 1399

**These times are not changeable!**

# Scores

## Main Course (22)

- Class activities: 1
- Midterm: 4
- Final exam: 6
- GDD: 1
- Prototype: 2
- Final Project: 5
- Homework 1: 0.25
- Homework 2: 0.25
- Homework 3: 0.5
- Seminar: 2

## Laboratory Course (22)

- Class activities: 0
- Midterm: 0
- Final exam: 0
- GDD: 2
- Prototype: 4
- Final Project: 12
- Homework 1: 1
- Homework 2: 1
- Homework 3: 2
- Seminar: 0



# Notes

- Download and install unity 2019.4.10 from the unity website (<https://unity3d.com/get-unity/download/archive>)
- Download video tutorial for unity (<https://downloadly.ir/elearning/video-tutorials/learn-to-code-by-making-games/>)
- It is not an easy course and if you want to pass this course successfully you must try hard and follow deadlines and do your best in the unity projects and exams.
- All kinds of questions will be found in the exams!
- Don't procrastinate! If you postpone all of them for the exam, you can't get a good score even by cramming at the exam!
- Pay attention to all of the conversations at the class.

# References

- Main course:
  - Slides
  - All the topics and concepts that we say in the class for unity
  - Udemy - Complete C# Unity Developer 2D Learn to Code Making Games
  - Generally, Whatever we say in the class could be a question in the final exam!
- Optional sources:
  - Game Engine Architecture, by Jason Gregory
  - Introduction to Game Development, Steve Rabin