

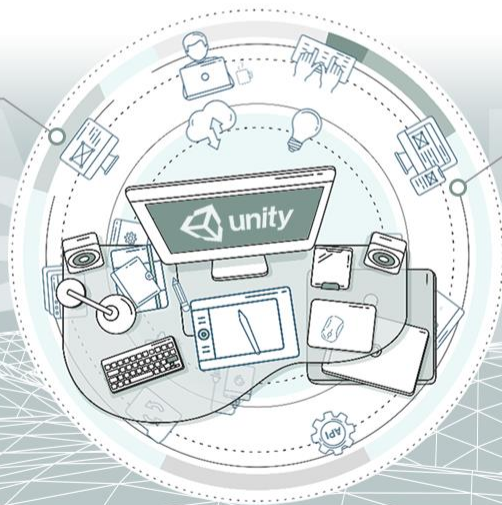
유니티(Unity)를 활용한

그래픽스 프로그래밍

01 Course Overview

Geometry

Animation



Course Information



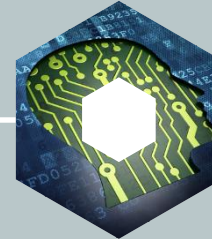
Course

- ▶ Graphics Programming using Unity (545240-1)
- ▶ Fall 2023, 3 credits, 3 hours
- ▶ Course hour : Saturday 8-13 (13:00-16:00)



Instructor

- ▶ Kyoung Shin Park
- ▶ kpark@dankook.ac.kr
- ▶ 031-8005-3161 (office)
010-8636-1960 (mobile)
- ▶ 2nd Engineering Building, Room 512
- ▶ Office hour : by appointment

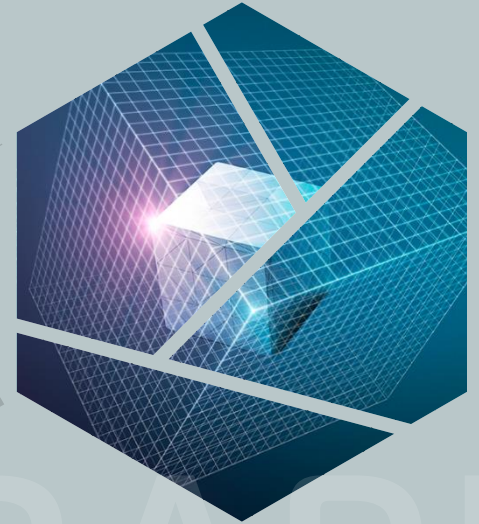


Prerequisite courses

- ▶ HCI Programming (C# Programming)

Purpose

- » This course introduces the fundamental concepts of 3D computer graphics programming using Unity.
- » Students will learn and practice Unity programming basics, the basic elements of graphics and learn the core graphics technology, the tools needed for graphics production.
- » In addition, students will form project groups to create a simple computer graphics project using Unity.



GRAPHIC

Text Book

» Text Book

- ▶ 절대강좌! 유니티 VR/AR, 이재현 저, 위키북스
- ▶ 유니티 교과서, 기타무라 마나미 저, 길벗

» Reference Book

- ▶ Core Techniques and Algorithms in Game Programming,
Daniel Sanchez-Crespo Dalmau



이미지 출처 <https://www.gilbut.co.kr/book/view?bookcode=BN003748>



이미지 출처 <https://wikibook.co.kr/vrar/>

Evaluation

- » Attendance : 10%
- » Midterm Exam : 30%
 - There will be a midterm exam that covers all the subjects discussed in the classroom.
- » Individual Assignment : 20%
- » Final Term Project : 40%
 - Proposal 10%
 - Midterm report & presentation 10%
 - Progress report & presentation 10%
 - Final report & presentation & Implementation 10%
- » **Class Participation & Attitude : extra 10%**



Schedule

- 1 week ▶ Course Overview
- 2 week ▶ Introduction to CG
- 3 week ▶ Vector
- 4 week ▶ Matrix
- 5 week ▶ Unity Installation, Introduction to Unity
▶ **Term Project Group Formation(Zoom)**
- 6 week ▶ Geometry and Geometric Programming
▶ **Term Project Proposal Presentation(Zoom)**
- 7 week ▶ Transformation
▶ 3D Orientation Euler, Axis-Angel, Quaternions
- 8 week ▶ **Midterm(online exam)**

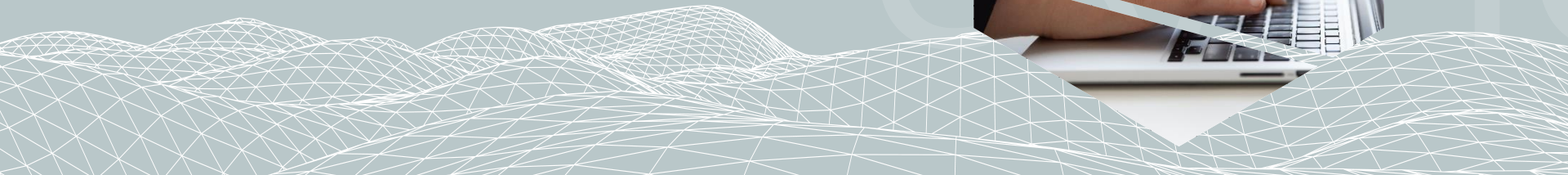
Schedule

- 9 week ▶ **Term Project Midterm Presentation(Zoom)**
- 10 week ▶ GUI, Color, Lighting, Texturing, Shader
- 11 week ▶ Camera
- 12 week ▶ Physics, Collision
▶ **Term Project Progress Report Presentation(Zoom)**
- 13 week ▶ Mesh, Mesh Hierarchy Animation
▶ Skeletal Animation, Skinning
- 14 week ▶ Terrain Rendering
▶ Particle System
- 15 week ▶ **Term Project Final Presentation(Zoom)**

Exams

» Midterm Exam

- 1week~7week course material
- 2hour(or 1day) open-book exam



Individual Homework

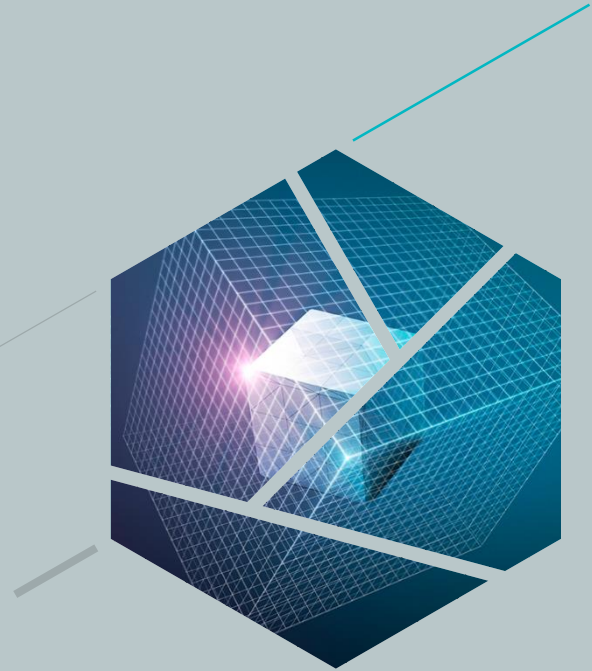
» Programming Exercises

- 4~5 Assignments
- Turn in all your source codes, executable, short report containing the snapshot



Term Project

- » Unity Game Development **(VR, AR)**
- » Students will work on a semester-long project that will comprise a major part of the class grade.
- » Students are encouraged to work on a project related to your own area of interest.
- » Projects can be done as groups of two or three.
- » Also, the project report should indicate to which portions of the project each member contributed.
- » You group project blog will also help monitor your steady progress across the semester.
- » Also, the final project report should indicate to which portions of the project each member contributed.



Term Project

» Project Group Formation (5th week) by Zoom

- Project groups will form
(2~3 students in each group)

» Project proposal (6th week) by Zoom

- 5min presentation
- 2~4page
(single-space, 10 point font) report



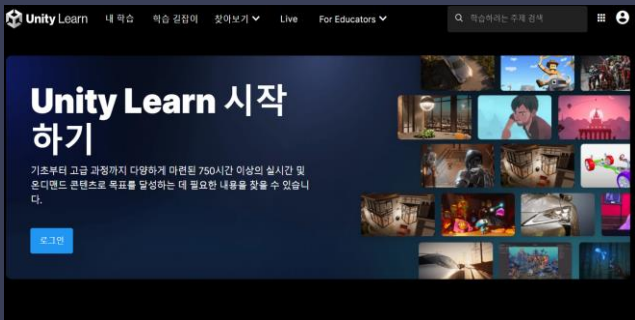
» Project Midterm Presentation (9th week) & Progress Report (12th week)

- Implementation progress
- 10~15min presentation(ppt) & discussion
- 4page
(single-space, 10 point font) report

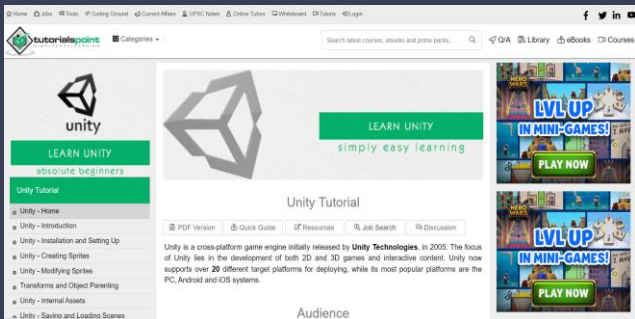
» Project Final Presentation & Final Report (15th week)

- 20min presentation(ppt) & project demonstration
- 10page (single-space, 10 point font) report
- Turn in all your source codes & executable
- Project implementation & Blogging

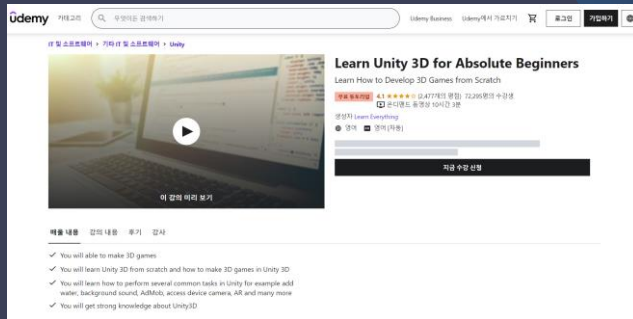
Online Resources



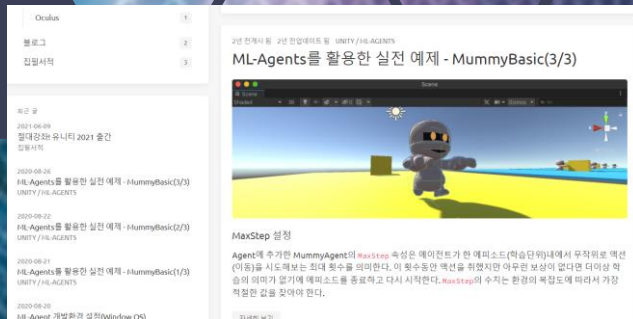
Unity Learn: Learn game development w/Unity
<https://learn.unity.com/>



Tutorialspoint Unity
<https://www.tutorialspoint.com/unity/index.htm>



Udemy Unity
<https://www.udemy.com/course/learnunity3d/>



절대강좌! 유니티
<https://unity3dstudy.com>

Announcement

» Class blog

▶ <http://dis.dankook.ac.kr/lectures/gp23/>

Cartoon : Teach Yourself C++ in 21 Days

Days 1 - 10
Teach yourself variables, constants, arrays, strings, expressions, statements, functions,...



Days 11 - 21
Teach yourself program flow, pointers, references, classes, objects, inheritance, polymorphism,



Days 22 - 697
Do a lot of recreational programming. Have fun hacking but remember to learn from your mistakes.



Days 698 - 3648
Interact with other programmers. Work on programming projects together. Learn from them.



Days 3649 - 7781
Teach yourself advanced theoretical physics and formulate a consistent theory of quantum gravity.



Days 7782 - 14611
Teach yourself biochemistry, molecular biology, genetics,...



Day 14611
Use knowledge of biology to make an age-reversing potion.



Day 14611
Use knowledge of physics to build flux capacitor and go back in time to day 21.



Day 21
Replace younger self.

