**Global Learning Initiatives Program Course Syllabus**

**Course Information**

|  |  |
| --- | --- |
| Course Name | AR/VR Design & Fabrication Studio (CITE490K) |
| Lecturer(s) | Prof. Juhong Park |
| Course Description | This is a fundamental course in preparation for the study of AR/VR/MR technologies. Students can learn the basics of Unity 3D, C# Programming, and Physical Computing. Throughout a semester, students develop an independent project using an Oculus Quest 2 or Hololens 2 to combine a physical and a virtual environment. |
| Course Objectives | By developing a hybrid reality project, students will learn 3D Model/Space building skill sets, interaction technology, and redefine what is the reality that we live in. |
| Suggested Proficiencies | 3D CAD Modeling using Rhino 3D, 3DS Max, Maya, Sketchup, or Inventor.Programming Skills such as Python, Java, or C/C++/C#Object Oriented ProgrammingPhysical Computing, such as Arduino, or Pi  |
| Reading List | Reading materials will be offered online. |
| Grading Criteria | Usual grades (60%) = Weekly Mini Project Submission 14 weeks in totalFinal Project grade (40%)  |

**Course Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| Class(Week) | Date  | Course Topic | Lecturer |
| 1 | 2022/09/05 2022/09/07  | 1. Introduction 1.1 Final Project Overview  | *Prof. Juhong Park* |
| 2 | 2022/09/12 2022/09/14  | 2. 3D Model Making 2.1 Rhino Introduction | *Prof. Juhong Park* |
| 3 | 2022/09/19 2022/09/21  | 3. Environment3.1 Lighting Intro3.2 Camera Intro | *Prof. Juhong Park* |
| 4 | 2022/09/26 2022/09/28  | 4. Advanced Model Making4.1 Grasshopper Intro | *Prof. Juhong Park* |
| 5 | 2022/10/032022/10/05 | 5. Advanced Model Making5.1 Rhino-Python5.2 Algorithmic Form | *Prof. Juhong Park* |
| 6 | 2022/10/102022/10/12 | 6. Advanced Model Making6.1 OOP Intro6.2 Inheritance6.3 Association | *Prof. Juhong Park* |
| 7 | 2022/10/172022/10/19 | 7 Cellular Automata / Flocking7.1 Generative Form7.2 Agent-Based Form | *Prof. Juhong Park* |
| 8 | 2022/10/242022/10/26 | 8 Unity 3D + Oculus Quest - Introduction8.1 User Interfaces8.2 Oculus Libraries | *Prof. Juhong Park* |
| 9 | 2022/10/312022/11/01 | 9. Unity 3D + Oculus Quest – Space Making9.1 Exchanging Geometries9.2 Setting Cameras | *Prof. Juhong Park* |
| 10 | 2022/11/072022/11/09 | 10. Unity 3D + Oculus Quest + Arduino10.1 Virtual + Physical Hybrid Environment | *Prof. Juhong Park* |
| 11 | 2022/11/142022/11/16 | Hololens 2 – IntroductionUser Interfaces | *Prof. Juhong Park* |
| 12 | 2022/11/212022/11/23 | Hololens 2 - EnvironmentsGravity/PhysicsSpace Awareness | *Prof. Juhong Park* |
| 13 | 2022/11/282022/11/31 | Hololens 2 - InteractionButtonsFinger Gesture | *Prof. Juhong Park* |
| 14 | 2022/12/052022/12/07 | Final Exam Week-Independent Project Preparation | *Prof. Juhong Park* |
| 15 | 2022/12/122022/12/14 | Final Project Review | *Prof. Juhong Park* |