Virtual Reality DeCal Spring 2019

**Time:** Thurs. 5-7pm or Fri. 4:30-6:30pm
**Class:** CS 98/198, 3 Units
**Location:** Jacobs 10C
**Course Website:** vr.berkeley.edu/decal
**Contact:** decal@vr.berkeley.edu

**Course Description**

Similarly to how mobile devices revolutionized the way we interact with the world, virtual reality represents another exciting paradigm shift in human computer interaction. This class aims to introduce students to this new medium and give them the opportunity to work with VR-ready computers and headsets.

The VR DeCal teaches students how to use Unity, a game development engine, to create virtual reality applications. This involves imparting technical knowledge, VR design principles, and self-learning skills. Students will be exposed to many different kinds of VR applications and work in teams to build their own from scratch. After completion of the course, interested students may apply to continue their projects under the VR @ Berkeley club, or to join a different project team.

The course is split into two halves. In the first half, students focus on learning technical Unity skills along with VR concepts, design principles, and best practices. In the second half, special topic / guest lectures will give insights into various parts of the VR field, while students dedicate their time to their final projects.

This class is hosted by Virtual Reality @ Berkeley and the VR DeCal Facilitator Team.

**Class Format**

**Attendance:** There are two identical sessions of this class held weekly. In-class attendance at one of these sessions is required, with up to two unexcused absences are allowed without penalty. Excused attendances are uncontrollable circumstances like family emergencies or sickness.

**Lecture:** Each class starts off with a 20-30 minute lecture (possibly longer for guest speakers). They cover a wide range of topics, from technical skills and design practices in the first half, to various special topics in the second half. After lecture, students will spend the rest of class working on either lab or their final project.
**Lab:** Students spend the first half of the semester working on labs. These are designed to be finished within the allotted class time, and each one builds on top of the previous, culminating in a complete shooter VR game. Each week’s lab must be checked off by a facilitator by next week’s class. No late labs will be accepted.

**Homework:** Homeworks are stand-alone Unity exercises and can be done on most laptops or computers. Like labs, they are due the day of next week’s class. HW can be submitted late for half credit. Regrade requests will be open for a week after a homework is due.

**Final Project:** Students start off by submitting a preliminary proposal, which they pitch in class. They then form groups and ideas during a hackathon-style idea mixer. The resulting teams work to turn the idea into a fully-fledged VR application, under guidance from the decal staff. Students show off their work to the public in an expo at the end of the semester.

**Grading Policy:** The grading of this course is split into four major sections.

- **Attendance (20%)**
- **Labs (30%)**
- **Homework (20%)**
- **Final Project (30%)**
  - **Final Project Grade (20%)**
  - **Peer Evaluation (5%)**
  - **Preliminary Project Proposal (2.5%)**
  - **Final Project Proposal (2.5%)**
| Week 0 | Feb. 7-8 | An Introduction to Virtual Reality  
Familiarization with the Oculus Rift, trying VR demos. |
|---|---|---|
| **Week 1** | Feb. 14-15 | Fundamentals of Virtual Reality  
LAB1: Setting Up the Project  
*HW1: The Rube Goldberg Ball Machine* |
| **Week 2** | Feb. 21-22 | Locomotion and Motion Sickness  
LAB2: Building the Gun  
*HW2: Music Visualizer* |
| **Week 3** | Feb. 28 - Mar. 1 | Crash Course in Modeling  
LAB3: Maya Workshop  
*HW3: Maya Modeling*  
*Come with Maya installed!* |
| **Week 4** | Feb. 7-8 | Hardware and Input Schemes  
LAB4: Creating the Monster  
*HW4: Fractal Generation* |
| **Week 5** | Mar. 7-8 | Principles of VR Design  
LAB5: Putting It All Together  
*HW5: Pong + Preliminary Project Proposal* |
| **Week 6** | Mar. 14-15 | *[Special Topics] - TBD*  
Project Idea Mixer  
*HW: Final Project Proposal* |
| **Week 7** | Mar. 28-29 | Spring Break - No Class |
| **Week 8** | Apr. 4-5 | *[Special Topics] - TBD*  
Project work session.*
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<th>Week 9</th>
<th>[Special Topics] - TBD</th>
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<td>Apr. 11-12</td>
<td>Project work session.</td>
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<th>Week 10</th>
<th>[Special Topics] - TBD</th>
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<td>Apr. 18-19</td>
<td>Project work session.</td>
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<th>Week 11</th>
<th>[Special Topics] - TBD</th>
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<td>Apr. 25-26</td>
<td>Project work session.</td>
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<th>Week 12</th>
<th>Project Expo!</th>
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