

# Syllabus

## How Virtual Reality Works

Instructor: Dr. Jurgen Schulze, University of California, San Diego

### Course Overview

This course, which is the first in the EdX Virtual Reality Professional Certificate Program, explores the foundations of development of user friendly virtual reality applications for consumer as well as enterprise solutions. Both hardware and software aspects will be discussed. You will learn to evaluate devices necessary for virtual reality applications, what their differences are, how you write interactive applications for virtual reality, and we will discuss the most frequent problems you are going to need to solve to write virtual reality software.

In this course, you will explore the basics of virtual reality software through exploration and analysis of available VR apps. For those with more technical background, you may optionally choose to explore a relatively recent Javascript API VR tool -- WebVR.

### Prerequisites

- Access to a smartphone (iPhone or Android)
- Basic technical skills for installing apps and moving content from your phone to a computer.
- Extensive programming experience is NOT required.
- A Google Cardboard like device is nice, but NOT required.

### Course Outline

Week 1 - Introduction to Virtual Reality. Basics and State of the Field

Week 2 - Input Devices: Degrees of Freedom and Tracking

Week 3 - Selection and Manipulation

Week 4 - Navigation: Travel and Wayfinding

Week 5 - Menus and Text Input

Week 6 - Design

### Verified Learner- Earning a Certificate

To earn a verified certificate for this course, you need to be enrolled as part of the verified track, complete identity verification, and earn a passing grade. If you are auditing the course, you will not receive a certificate.

## Grading

This course is offered for a letter grade as follows:

Grade	Percent of Available Points
A	85%-100%
B	70%-84.9%
C	60%-69.9%
D	<60%

Passing Grade: You must score 60% or above to pass the course.

Weights of Graded Assessments: Your grade is determined by earning points in 4 categories:

- Engagement (15%) -- earned by clicking on the “Mark as Complete” items in Engagement sections
- Applications (15%) -- earned by clicking on the “Mark as Complete” item after contributing to the discussion in Applications sections.
- Quizzes (20%) -- earned by completing quiz questions each week. We seek to support you in mastering the content in this class. As such, quizzes can be taken an unlimited number of times. We encourage you to take and re-take the quizzes until you have learned all the content and as a manner of supporting learning through retrieval practice.
- Projects (50%) -- earned by completing the App Exploration and Reflection Peer Review assessments and reviewing the work of at least 3 of your peers. We have designed these Projects to help you see the application of concepts learned during the week and to engage you in consideration of the potential power of these concepts in various scenarios.

Please see the detailed discussion of these categories in the Getting Started section of Week 1.

## Effort

We expect this course will take you 5-7 hours per week to complete.

## Deadlines

This course is self-paced, so there are no deadlines for any specific assignment. This course will be open until September 11, 2017. Shortly after that we expect to re-open the course, self-paced, with updates.

## Communication

General Discussion Forum: Please reach out to us through the discussion forum with any questions about the course content. Please allow 24 hours to receive a response from the VR Teaching Team. Also, all communication on the discussion forum must follow the edX Honor Code. Never post code or solutions to assignments on the discussion forum.

What's Exciting in VR Discussion Forum: We will (and encourage you to as well) be posting about news, announcements, products, and apps in the VR field. We'll also share news about what's going on in the VR lab at UC San Diego/Qualcomm Institute and with Dr. Schulze. But we know there's lots of exciting stuff going on in VR around the world! We strongly encourage learners to post things of interest and discuss with fellow learners in this forum!

### **edX Honor Code**

You may discuss your homework and class material with classmates; in fact, we encourage you to do so (please avoid spoilers and explicit code on the forums, though!). However, all submitted work must be your own, and you must write all programs yourself (no copying code from classmates, previous instances of the class or online resources). You must only submit images for grading that were actually produced by your program/yourself. You must abide by the edX Honor Code. Please do not post your source code or programs on external websites or social media. In particular, *do not post source code to a public repository on github or a similar site; use private/not searchable repositories, or simply do not use github.*