

# Berrien Springs Partnership Syllabus and Instructor Qualifications

**CLASS TITLE:** Exploring the World Through Virtual Reality

**GRADE OR AGE LEVELS:** Grades 5th & up

**START DATE:** contact instructor for class dates      **END DATE:**

**# WEEKS TOTAL:** 17      **WEEKS OFF:** 3

**DAY/TIME REQUIRED:** Wednesday 12-1pm **ADD'L DAYS/WK AVAILABLE:**

**# HOURS (REQUIRED):** 17      **# HOURS (OPTIONAL):** 13 (approx.)

**TOTAL SEMESTER HOURS POSSIBLE:** 30

**LOCATION/ADDRESS:** STEAMWORKS: 606 Carrol St, Suite B, Buchanan MI 49107

**MAIN INSTRUCTOR:** Rob Kerr

**CONTACT INFORMATION:**

phone: 269-362-5046

email: rob@funlearningcompany.com

website: <https://FunLearningCompany.com/>

**ADDITIONAL REGISTRATION AT SITE REQUIRED?** NO

## **MAIN INSTRUCTOR QUALIFICATIONS:**

I am passionate about helping students to explore new things and express their creativity. I have been teaching myself for the last eight years. For the last six of those, I've been partnering with different schools through the Fun Learning Company to teach critical thinking and STEAM courses. I enjoy tinkering and making things myself, and seek to encourage the entrepreneurial spirit in others as well. I have published my own card game, as well as writing and producing an album. One of my favorite things is when I can combine multiple interests together, like when I wrote a ukulele song for my Drone Building students to help them remember yaw, pitch & roll. I love hearing about my students' interests and seeing how we can bring those into our classroom as well. I hope to continue learning from, and with, young people for years to come.

## **COURSE DESCRIPTION (complete overview shown on website):**

Students will gain familiarity with the world of Virtual Reality, including the technology involved, its uses, and its limitations. We will use VR as a medium to explore the world around us, from visualizing forces of motion or parts of an atom, to building electrical circuits and watching current flow, to exploring remote parts of our world – from the polar

ice caps to the deep sea! Students will learn how to conduct experiments and gather data through VR, and see how it can be used as an inquiry tool to help us understand the incredible forces at play around us.

### SYLLABUS/OUTLINE: weekly breakdown of Project-Based Learning activities

Weeks 1 & 2: Introduction to VR and Team building/Collaboration

Weeks 3-6: Exploring motion & mechanics

Weeks 7-11: Visualizing chemical reactions and molecules

Weeks 13-15: Electricity & circuits in VR

Weeks 16 & 17: Around the world and under the sea – exploring remote areas with VR

### COURSE OBJECTIVES AND APPROXIMATE TARGET DATES:

After 6 weeks, the students should have a basic understanding of how virtual reality works and how we can interact with a virtual world, as well as practice collaborating through VR and visualizing phenomenon around us, like forces and motion, using VR. This includes things like:

- Understanding and predicting real time graphs of kinetic and potential energy, or force and acceleration.
- Recognizing how concepts like conservation of energy and inertia are visible in the world around us all the time.

Next, after 11 weeks, student will utilize virtual reality to understand microorganisms and nanoscale – they will be able to visualize chemical reactions playing out in real-time and see what's going on beneath the surface. The great thing about VR is that we can even slow down, and re-watch, things to capture every detail! Through this unit, students will further explore topics like:

- How molecules break down and reform in chemical reactions.
- How molecules move around and how that changes as a substance changes states.

Those first few units will be primarily instructor-led, showing students examples of what's possible and helping familiarize them with the technology. The next two units will be more student-led, starting with an “electrical circuit playground,” where students can virtually create their own circuits and watch electricity travel through different paths – down to the very electrons orbiting the nucleus of an atom, and the valence electrons that travel as electric current. Here, the instructor will help guide and answer questions as students explore what is possible.

Finally, they'll have the chance to let their curiosity “run wild” as they explore remote places of the world from the depths of the sea to polar ice caps. Students will share what they've learned through their virtual exploration and research and see some of the most stunning visuals that other students have found.

By the end of the semester, students should:

1. Understand the world and technology of Virtual Reality, including both its uses and limitations.
2. Have practiced using VR to see things at a different scale, time, and even visualize invisible forces to better understand the world around them.
3. Be comfortable exploring and finding information more autonomously within the realm of VR.

If students wish to continue for another semester (or for new students joining mid-year), we will start by reviewing with a more instructor-led unit on alternative energy. Then, we'll again transition into student-driven exploration, this time focusing on "time travel" and how VR can be used to recreate historical events and places.

Finally, students will choose one area we've covered to focus on more in-depth and come up with a statement of inquiry + proposal of how they can use virtual experiments to answer their inquiry and present their results.

#### STUDENT ASSESSMENT - what will be used to evaluate student progress and/or end of semester pass/fail status?

All classes abide by the following:

1. Student agrees to attend at least 80% of class sessions/lessons offered. Attendance is kept online and tracked by Partnership staff. Failure to meet 80% or be on track to meet 80% may result in program discontinuation.
2. The Partnership Student Assessment or Performance Form is filled out by the teacher and turned in to Partnership staff. The link to this form is found on the web page for this class. Failing marks for lack of participation, behavior issues, practice time, etc. may result in program discontinuation.

#### Class-specific assessment:

Our instructor will evaluate each student using Berrien's evaluation form and passing criteria will be based solely on students attending and actively participating in the class sessions.

Additionally, students will take our course pre/post assessment in Moodle. (We can provide your teachers with non-editing accounts to see our virtual Moodle courses upon request).

#### ADDITIONAL RESOURCES: (online, books, video, etc.):

Each student will have their own login with access to our virtual Moodle course in Drone Building.

## CLASS POLICIES: ATTENDANCE, BEHAVIOR, WEATHER, ETC.

**Attendance:** attendance is required, and students should notify the instructor in advance of any absence.

**Behavior:** any behavior issues will first be privately brought to the attention of the parent and, should the behavior persist, to the partnership staff.

**Weather:** the classes will be canceled on any days when Berrien Springs Public Schools are closed. We will also contact families to remind them of this in the event of a weather-related cancellation. We will make up any canceled class meetings at a later date.