

## **EFK Schedule – Octane Raceway**

### **Week 1: 3-D Video Game Design: Kart Racing (Week of 5/31)**

Race to the finish and create your own racing game in Microsoft's Kodu gaming environment. From terrain design to enemy selection, students are placed at the wheel and given full control to design their own video game while exploring the foundations of coding. Kick your creativity in gear with Kodu Kart Racing.

### **Week 2: MinecraftEDU – Traveling into the Future (Week of 6/6)**

This camp will immerse students in the expansive world of Minecraft, and will challenge student's ingenuity and problem solving skills as they navigate through several engineering challenges. Students will learn how to use teamwork and manage resources like an engineer in the real world. This camp will be played out in the expansive world of Minecraft, and will focus on learning engineering concepts through guided gameplay. Each day, students will be given missions and assignments based on different scenarios.

### **Week 3 : EV3 Lego® Robotics: Robo Games (Week of 6/13)**

Robo Games curriculum is designed to introduce students to the world of not only building, but also programming basic robots. Students will work in teams to design, build, test and improve their robots to compete against other teams in challenges such as Robot Racing, Tug of War, Jousting, a Hungry Robot Challenge and conclude the week with an amazing battle bot challenge and tournament!

### **Week 4: Levitrons (Week of 6/20)**

Levitrons use magnetic levitation to suspend them in the air during travel. Magnetic levitation machines are not only more reliable than their wheeled counterparts, but they are able to obtain far greater speeds. In this camp, students will gain an understanding of magnetic repulsion, friction, propulsion systems, equations, analyzing and graphing data, while using the engineering design process to address to work through various engineering challenges.

### **Week 5: Momentum Madness (Week of 6/27)**

Students will work to build dragsters from a standard dragster template and use the engineering design process to run a series of tests that teach laws of motion. Taking what they learn from experimentation, the week culminates in an engineering challenge where students will have to design and build a custom racer using common materials to create the most efficient design. Students will then compete in racing their dragsters off our custom launcher.

### **Week 6: MinecraftEDU: Medieval Redstone (Week of 7/5)**

MinecraftEDU is an expansive game that lets players design and create unique worlds with amazing structures. One of the more complicated aspects of MinecraftEDU is Redstone, which is MinecraftEDU's version of electrical circuitry. This class will introduce students to the many uses of Redstone through a Medieval themed adventure of creation, exploration, and castle besieging, with students making mine cart tracks to help them gather resources, working together to build their kingdom, and designing traps to defend their castle, all with the use of Redstone.

**Week 7: Hydraulic Machines (Week of 7/11)**

Hydraulics is a topic in applied science and engineering dealing with the mechanical properties of liquids or fluids. Hydraulic machines are machinery and tools that use liquid fluid power to do simple work. In this camp, students will work in teams to build a hydraulic robotic arm. Through a series of engineering challenges, students will learn about the cartesian coordinate system, simple machines, basic programming, mechanical advantage, electromagnetism, teamwork, and more!

**Week 8: Fusion Video Game Design: Platform Games (Week of 7/18)**

During the Electronic Game Design: Platform Games, students will use Multimedia Fusion 2.5<sup>®</sup> to create their own video game. Platform games are typically side-scrolling/up down type games similar to Mario Mario Brothers. In this camp, students will build a complete video game from start to finish including building and programming characters, enemies, projectiles and more! At the end of the class, students take home a copy of the game they create.

**Week 9: EV3 Lego<sup>®</sup> Robotics: Mazes and Obstacle Courses (Week of 7/25)**

In this camp, students will work in teams to build and program robots to traverse a variety of obstacle courses and mazes. Students will be presented new challenges each day that scale in difficulty and utilize a variety of sensors. Fun side challenges will be included such as tug-of war, racing and battle bots to end the week.

**Week 10: MinecraftEDU: Theme Park Adventure (Week of 8/1)**

In this exciting camp, students will explore civil, mechanical and electrical engineering as they work in teams to create the ultimate theme park. Students will create a project plan to design all elements of the park. Then work collaboratively to build, test and improve the environment.