

# SUMMER CAMPS



**UC Davis School of Education – Adventures In Enrichment**

*Invites You To Have a*

## **STEM-Tastic Summer**

(Science, Technology, Engineering, and Math)

**5 weeks of fun and enrichment**

**June 18 – August 3** *(no camps the week of July 2)*

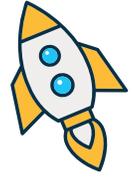
**Open to young people entering grades 1-8 in the fall of 2018**

*Early bird discounts and a chance to meet the instructors.  
See inside for details!*





# UC DAVIS SCHOOL OF EDUCATION SUMMER CAMPS



## Welcome!

Choose the camp based upon the campers grade level in the fall of 2018. For campers attending both the regular camp and the High Velocity camp, there will be supervision provided between 2-2:30 p.m. and 5:30-6 p.m. at no additional charge. We will also provide an early morning program from 7:30-8:30 a.m. and an afternoon extended day program from 2-6 p.m.

### Register early and save!

**Early Bird Special:** February 5 – April 5

**Regular Camps:** \$275 • High Velocity: \$175

**On-going Registration after April 8**

**Regular Camps:** \$295 • **High Velocity:** \$195

<https://www.regonline.com/builder/site/Default.aspx?EventID=2167996>



## ▶ June 18-22

- Grades 1-2: Unleash Your Wild Side
- Grades 3-4: Science of the Human Body
- Grades 4-5: Intermediate Robotics
- Grades 6-8: Becoming a STEM Maker
- Grades 6-8: Engineering Design with Cars and Boats
- Grades 7-8: Biotech

### **HIGH VELOCITY**

- Grades 3-4: Beginning Robotics
- Grades 6-8: Minecraft
- Grades 7-8: Exploring the Microscopic World

#### **\*Additional Camps Coming Soon!**

*\*Parents will be notified via email of new camp additions.*

## ▶ June 25-29

- Grades 1-2: Seed Rescue
- Grades 3-4: Science of the Human Body
- Grades 6-7: Rube Goldberg
- Grades 6-7: Competitive Robotics
- Grades 7-8: Ocean Exploration
- Grades 7-8: Computer Aided Design

### **HIGH VELOCITY**

- Grades 6-7: Go Fishing: Engineering Prosthetic Fish Tails
- Grades 6-8: Engineering Design with Cars and Boats

#### **\*Additional Camps Coming Soon!**

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## ▶ July 9-13

- Grades 1-2: Solar House Design
- Grades 3-4: Engineering Design with Cars and Boats
- Grades 5-6: Yeast Powered Cars
- Grades 6-8: Making with Multimedia
- Grades 7-8: Bodies Health and Technology

### **HIGH VELOCITY**

- Grades 3-4: Being Creative with Fractions
- Grades 6-7: Go Fishing: Engineering Prosthetic Fish Tails
- Grades 7-8: Advanced Robotics
- Grades 7-8: Exploring the Microscopic World

#### **\*Additional Camps Coming Soon!**

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## ▶ July 16-20

- Grades 1-2: Shadow Box Theater
- Grades 3-4: The World of Bugs
- Grades 5-6: Game Design
- Grades 6-8: Becoming a STEM Maker
- Grades 6-8: Flight and Space
- Grades 7-8: Ocean Exploration

### **HIGH VELOCITY**

- Grades 1-2: Beginning Robotics
- Grades 5-6: Being Creative with Fractions

#### **\*Additional Camps Coming Soon!**

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## ▶ July 23-27

- Grades 1-2: Unleash Your Wild Side
- Grades 3-4: The World of Bugs
- Grades 5-6: Game Design
- Grades 6-8: Anatomy
- Grades 6-8: Computer Aided Design for Makers
- Grades 7-8: Bodies Health and Technology

### **HIGH VELOCITY**

- Grades 1-2: Beginning Robotics
- Grades 7-8: Exploring the Microscopic World

#### **\*Additional Camps Coming Soon!**

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## ▶ July 30 – August 3

- Grades 1-2: STEM Make-It Take-It
- Grades 1-2: The World of Bugs
- Grades 6-8: Competitive Robotics
- Grades 6-8: Making with Multimedia
- Grades 6-8: Rube Goldberg Apparatus

### **HIGH VELOCITY**

- Grades 2-4: Beginning Robotics

#### **\*Camps Coming Soon!**

*\*Parents will be notified via email of new camp additions.*



# Camp Descriptions



**June 18-22**

## **Unleash Your Wild Side, Grades 1-2**

Investigate the diversity of the planet as globe-trotting artists! From the arctic to the high desert, revel in the complexities of different ecosystems through creative, hands-on art projects that inspect the science of the most intricate environments of the globe. Leave no rock unturned as students report back on the unique aspects of the places and creatures they encounter that day. Campers will cultivate art and language skills, promote global awareness and spark a love for STEAM as they work alongside the flora, fauna, wild beasts and incredible cultures of the Earth!

## **Science of the Human Body, Grades 3-4**

Take a closer look at the microscopic mechanisms that make humans tick! Each unit of this awesome 5-day camp examines the complexities of human anatomy and physiology with engaging, fast paced activities. Through learning-by-doing experiences, students begin to unravel the mysteries of the human body by running for a minute to measure heart rate, approximate energy expenditure and discover the importance of refueling with proper nutrition. Maintaining health and fitness is a lifelong endeavor, and *Science of the Human Body* is the perfect introduction to an eternity of healthy happiness!

## **Intermediate Robotics, Grades 4-5**

Campers will design, build and program their own LEGO MINDSTORM NXT robot. The camp will focus on the elements of design and testing participant's ideas and redesigning their robots until it meets the highest standards. We will also focus on presentation skills as campers show off their robots and demonstrate it to all the parents on the last day of camp.

## **Becoming a STEM Maker, Grades 6-8**

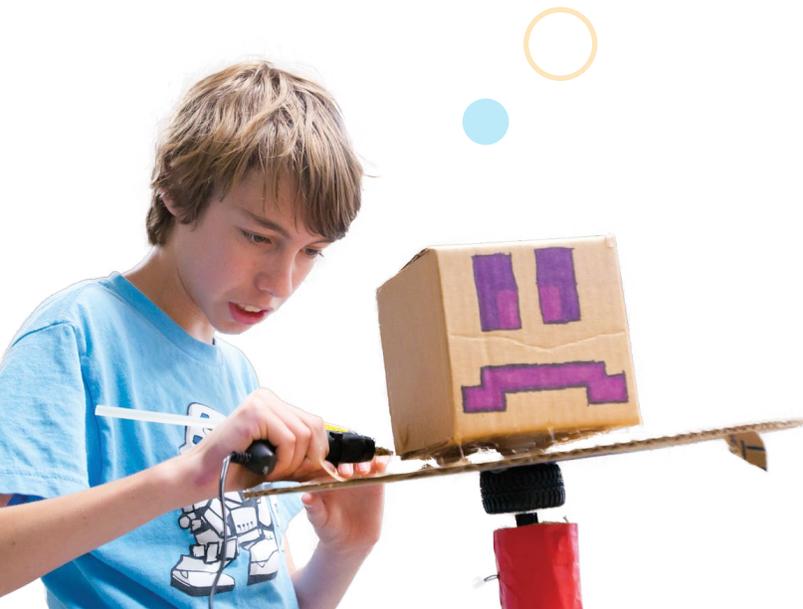
Makers are those imaginative individuals who are willing to go out on a limb and create. This course will teach campers how to design and bring their own projects to life with the help of some handy STEM topics and 3D printers. Campers will use and learn concepts revolving around design thinking and engineering. Projects will vary from highflying water rockets to sleek new 3D printed phone cases and anything else in between. Campers are encouraged to bring their own ideas and interests into this camp.

## **Engineering Design with Cars and Boats, Grades 6-8**

Students will be exploring the engineering design cycle. Students will build Paper Race Cars to explore properties of motion. Students will build Tin Foil Boats to explore the properties of density and buoyancy. Students will also build Toothpick Bridges/Towers to explore the properties of forces.

## **Biotech, Grades 7-8**

This camp will expose students to the diverse fields of biotechnology including biomedical engineering, bio-molecular genetics, bioprocess engineering, and agricultural and environmental engineering. Lessons engage students in engineering design problems that can be accomplished in a high school setting related to biomechanics, cardiovascular engineering, genetic engineering, agricultural biotechnology, tissue engineering, biomedical devices, human interface, bioprocesses, forensics, and bioethics. Although we may not complete labs in all these areas we will briefly touch upon each concept. This course will have a main focus in forensics.



## **HIGH VELOCITY**

### **Beginning Robotics, Grades 3-4**

During this week of camp, you will design, build and program your own WeDO 2.0. We will focus on the elements of design, testing your ideas and redesigning your robot until it meets your high standards. We will also have other engineering and design challenges throughout the week. Even if you have no previous skills building or programming robots you will be able to have a robot up and running the very first day.

### **Learn to Code with Minecraft, Grades 6-8**

There's a new animal in town: TURTLES! Yes, turtles. In this Minecraft mod (ComputerCraftEdu) there exist powerful, but clueless, turtle robots. Students will learn the fundamentals of programming through a tile-based interface. It's a fun and new twist on Minecraft and computer programming.

### **Exploring the Microscopic World, Grades 7-8**

During this amazing camp, students will take a whirlwind tour of the vast and incredible microscopic world. Campers will begin by working together to design their own simple version of a microscope. After creating and showing off their designs, students will learn about different kinds of microscopes and will learn how to use a microscope themselves to navigate and explore the tiny unseen world around us. Through hands-on activities, students will explore the diversity of microscopic organisms such as fungi, bacteria, and protozoans and will also learn about the vast impacts of microorganisms on our society, our bodies, and a few of the world's many ecosystems.

#### **\*Additional Camps Coming Soon!**

*\*Parents will be notified via email of new camp additions.*



## **June 25-29**

### **Seed Rescue, Grades 1-2**

In this camp students, will explore ways to pollinate plants in a greenhouse by creating a model plant pollinator. This camp is a hands-on camp which is designed for group activities. Activities will be fun, challenging and allow students to work in a team environment.

### **Science of the Human Body, Grades 3-4**

Take a closer look at the microscopic mechanisms that make humans tick! Each unit of this awesome 12-day camp examines the complexities of human anatomy and physiology with engaging, fast paced activities. Through learning-by-doing experiences, students begin to unravel the mysteries of the human body by running for a minute to measure heart rate, approximate energy expenditure and discover the importance of refueling with proper nutrition. Maintaining health and fitness is a lifelong endeavor, and *Science of the Human Body* is the perfect introduction to an eternity of healthy happiness!

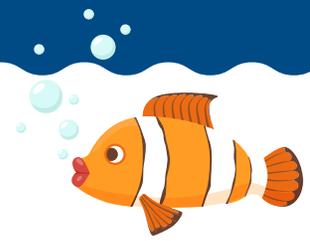
### **Rube Goldberg, Grades 6-7**

A Rube Goldberg machine is a simple machine that accomplishes a simple task in as complicated a way as possible. Campers utilize their knowledge of simple machines and basic physics to demonstrate creativity and complexity while entertaining everyone observing it in action. If campers have ever played the game "Mouse Trap," they have used a Rube Goldberg apparatus.

### **Competitive Robotics, Grades 6-7**

In Competitive Robotics, you will put your creative engineering skills to the test as you work to complete building, navigation and programming missions with your Lego EV3 robots. In addition to the many individual challenges, campers may choose to compete with each other to build the fastest and strongest robots in the daily head-to-head competitions. If you already know the basics to designing, building and programming, then this camp will be a great place to work with other young robotic engineers in a fun, friendly and competitive atmosphere.

# Camp Descriptions



## **Ocean Exploration, Grades 7-8**

In this incredible camp, students journey from the tropics to the poles, inspect arctic food webs, simulate coral reef adaptations and survey everything from the great river deltas to the Mariana Trench. They collaborate to bring the California sea otter back from the brink of extinction and track great white sharks across the open ocean, learning and answering important sea-dwelling questions about the variety of the oceans and the differences in ecosystems. Through action-packed activities, learners discover the physical and geological sciences that underpin all ocean life like density, buoyancy, heat transfer, plate tectonics and the water cycle. In Oceanic Exploration Camp, STEM education is your oyster!

## **Computer Aided Design for Makers, Grades 7-8**

Campers will learn how to create beautiful and accurate 3d models using Autodesk's professional Fusion 360 product design software. The skills learned from this class will serve campers particularly well if they envision their future possibly involving game creation, engineering, architecture, or industrial design. The projects will be fun and challenging and include activities such as 3d printed water rocket nozzles, movie props, and collaborative projects like a totem pole challenges and anything else in between. Kids are encouraged to bring their own ideas and interests into this course!

## **HIGH VELOCITY**

### **Go Fishing: Engineering Prosthetic Fish Tails, Grades 6-7**

Students will learn what is engineering and technology, and eventually create their own model prosthetics for a variety of animals who need them. This class is great for any student who loves animals, creating things and using everyday materials in an innovative way!



## **Engineering Design with Cars and Boats, Grades 6-8**

Students will be exploring the engineering design cycle. Students will build Paper Race Cars to explore properties of motion. Students will build Tin Foil Boats to explore the properties of density and buoyancy. Students will also build Toothpick Bridges/Towers to explore the properties of forces.

### **\*Additional Camps Coming Soon!**

*\*Parents will be notified via email of new camp additions.*

## **July 9-13**

### **Solar House Design, Grades 1-2**

In this camp students will explore energy conversion and will design a passive solar house based on criteria and constraints. This is a hands-on camp that will challenge students and create a fun and exciting learning environment.

### **Engineering Design with Cars and Boats, Grades 3-4**

Students will be exploring the engineering design cycle. Students will build Paper Race Cars to explore properties of motion. Students will build Tin Foil Boats to explore the properties of density and buoyancy. Students will also build Toothpick Bridges/Towers to explore the properties of forces.

### **Yeast Powered Cars, Grades 5-6**

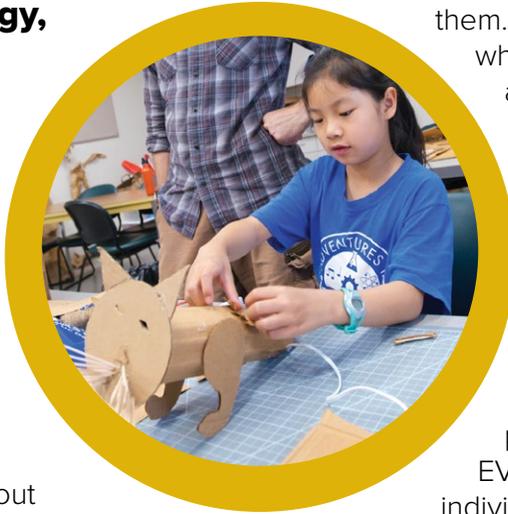
How do you build and power a car using only yeast, sugar and water? Students in this camp will not only learn how but be able to harness the power of pressurized carbon dioxide. Students will transfer and develop mechanical advantage through linkages, gears and other mechanisms. They will also learn the scientific method and how to set up a data table; they will utilize scientific evidence to power their cars effectively and efficiently. The camp will culminate with a final race to see which car traveled the furthest. Please note, only the first day of camp is mostly lecture.

## **Making with Multimedia, Grades 6-8**

In this course, campers will explore how to create vector art, a common industry media format, and how it can be used. Common projects include, but are not limited to, video game design, silk screens, 3d printing, and silk screens. Campers are encouraged to bring in their own ideas!

## **Bodies Health and Technology, Grades 7-8**

The amount of information and data available to the average person about their body and personal health has exploded over the last decade. Wearable devices, apps, games, and other technologies can even make discovering and exploring this information a fun experience! Pre-teens and youth can use these data, technologies, and applications to make healthy decisions or to answer questions about their own health. In this camp, participants will get to try out a wide variety of health devices, wearable technologies, games, and apps, and we will take some campus-based field trips to research centers developing new ones. Participants will also create and present designs for their own health-related technologies of the future! This is an ideal camp for youth interested in keeping fit and healthy, health careers, and technology design.



## **HIGH VELOCITY**

### **Being Creative with Fractions – Fraction Fundamentals, Grades 3-4**

We will explore the meaning of fractions using a range of situations and objects. In the first half of each session kids will get a chance to work with each other to think about the size of various fractions and understand the meaning of the numerators and denominators. This work will be under the guidance of experienced classroom teachers. Our goal will be for kids to recognize that the same quantity (two-thirds) can have different names ( $4/6$ ,  $6/9$ ,  $20/30$  or  $1/1.5$ ). In the second half of the session fraction ideas will be

applied to various art activities under the guidance of a camp counselor.

## **Go Fishing: Engineering Prosthetic Fish Tails Robotics, Grades 6-7**

Students will learn what is engineering and technology, and eventually create their own model prosthetics for a variety of animals who need them. This class is great for any student who loves animals, creating things and using everyday materials in an innovative way!

## **Advanced Robotics, Grades 7-8**

In Competitive Robotics you will put your create engineering skills to the test as you work to complete, navigation and programming missions with Lego EV3 robots. In addition to the many individual challenges, campers may choose to compete with each other to build the fastest and strongest robot.

## **Exploring the Microscopic World, Grades 7-8**

During this amazing camp, students will take a whirlwind tour of the vast and incredible microscopic world. Campers will begin by working together to design their own simple version of a microscope. After creating and showing off their designs, students will learn about different kinds of microscopes and will learn how to use a microscope themselves to navigate and explore the tiny unseen world around us. Through hands-on activities, students will explore the diversity of microscopic organisms such as fungi, bacteria, and protozoans and will also learn about the vast impacts of microorganisms on our society, our bodies, and a few of the world's many ecosystems.

### **\*Additional Camps Coming Soon!**

*\*Parents will be notified via email of new camp additions.*

# Camp Descriptions



## July 16-20

### Shadow Box Theater, Grades 1-2

In this camp students will explore light and shadows by planning, resting, and redesigning scenery for a shadow box theater. Students will engage in hands-on activities that will challenge them and allow for creativity.

### The World of Bugs, Grades 3-4

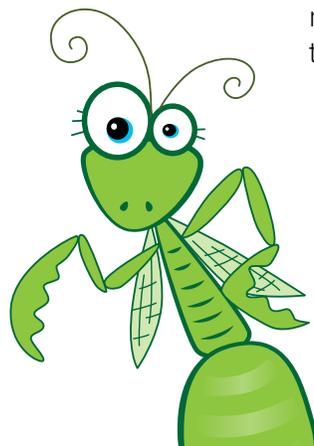
This is an active camp that will combine outdoor exploration, recreation and hands-on activities for our young campers. Throughout the week campers will discover how amazing and valuable bugs truly are. They will collect insects, perform experiments and activities with the insects and more. Collecting trips are interspersed with a series of fun projects and activities. This is the perfect camp for bug lovers and enthusiasts!

### Game Design, Grades 5-6

In this course, students will learn basic video game coding concepts by making different types of games, including racing, platform, launching, quest, and many more. By the end of the course, students will have learned the language of block coding and how to use it to create anything they can imagine.

### Becoming a STEM Maker, Grades 6-8

Makers are those imaginative individuals who are willing to go out on a limb and create. This course will teach campers how to design and bring their own projects to life with the help of some handy STEM topics and 3D printers. Campers will use and learn concepts revolving around design thinking and engineering. Projects will vary from highflying water rockets to sleek new 3D printed phone cases and anything else in between. Campers are encouraged to bring their own ideas and interests into this camp.



### Flight and Space, Grades 6-8

The exciting world of aerospace comes alive through Flight and Space. Campers explore the science behind aeronautics and use their knowledge to design, build and test a pneumatic rocket. Students will also participate in creating an online infomercial. They will use their knowledge and internet research to develop an aeronautic product that can be marketed and sold to any country. Students will present in groups of 3-4 using video media and online presentation tools.

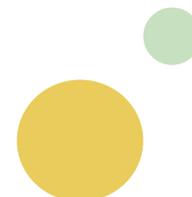
### Oceanic Exploration, Grades 7-8

In this incredible camp, students journey from the tropics to the poles, inspect arctic food webs, simulate coral reef adaptations and survey everything from the great river deltas to the Mariana Trench. They collaborate to bring the California sea otter back from the brink of extinction and track great white sharks across the open ocean, learning and answering important sea-dwelling questions about the variety of the oceans and the differences in ecosystems. Through action-packed activities, learners discover the physical and geological sciences that underpin all ocean life like density, buoyancy, heat transfer, plate tectonics and the water cycle. In *Oceanic Exploration Camp*, STEM education is your oyster!

## HIGH VELOCITY

### Beginning Robotics, Grades 1-2

During this week of camp, you will design, build and program your own WeDO 2.0. We will focus on the elements of design, testing your ideas and redesigning your robot until it meets your high standards. We will also have other engineering and design challenges throughout the week. Even if you have no previous skills building or programming robots you will be able to have a robot up and running the very first day.



## **Being Creative with Fractions – Fraction Operations, Grades 5-6**

We will add, subtract, multiply and divide fractions using a variety of tools. In the first half of each session kids will get a chance to work with each other to solve problems under the guidance of experienced teachers. Our goal will be for kids to understand and be able to explain what they are doing. In the second half of the session fraction ideas will be applied to various art activities under the guidance of a camp counselor.

### ***Additional Camps Coming Soon!***

*\*Parents will be notified via email of new camp additions.*

## **July 23-27**

### **Unleash Your Wild Side, Grades 1-2**

Investigate the diversity of the planet as globe-trotting artists! From the arctic to the high desert, revel in the complexities of different ecosystems through creative, hands-on art projects that inspect the science of the most intricate environments of the globe. Leave no rock unturned as students report back on the unique aspects of the places and creatures they encounter that day. They'll cultivate art and language skills, promote global awareness and spark a love for STEAM as they work alongside the flora, fauna, wild beasts and incredible cultures of the Earth!

### **The World of Bugs, Grades 3-4**

This is an active camp that will combine outdoor exploration, recreation and hands-on activities for our young campers. Throughout the week campers will discover how amazing and valuable bugs truly are. They will collect insects, perform experiments and activities with the insects and more. Collecting trips are interspersed with a series of fun projects and activities. This is the perfect camp for bug lovers and enthusiasts!

### **Game Design, Grades 5-6**

In this course, students will learn basic video game coding concepts by making different types of games, including racing, platform, launching, quest, and many more. By the end of the course, students will have learned the language of block coding and how to use it to create anything they can imagine.

### **Anatomy, Grades 6-8**

Description – Anatomy Camp! How many bones does an adult human have? Where are they and what are they called? Why is the heart a four-chambered system? Why do veins have valves and arteries don't? Where is the liver? All these answers and more in this camp. Although this camp will focus mainly on anatomy it is only natural that we discuss at times how the structure of an organ or body part is related to its function. Dissections will be included in this lab and thus this camp is only for grades 6-8.

### **Computer Aided Design for Makers, Grades 6-8**

Campers will learn how to create beautiful and accurate 3d models using Autodesk's professional Fusion 360 product design software. The skills learned from this class will serve campers particularly well if they envision their future possibly involving game creation, engineering, architecture, or industrial design. The projects will be fun and challenging and include activities such as 3d printed water rocket nozzles, movie props, and collaborative projects like a totem pole challenges and anything else in between. Kids are encouraged to bring their own ideas and interests into this course!

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The amount of information and data available to the average person about their body and personal health has exploded over the last decade. Wearable devices, apps, games, and other technologies can even make discovering and exploring this information a fun experience! Pre-teens and youth can use these data, technologies, and applications to make healthy decisions or to answer questions about their own health. In this camp, participants will get to try out a wide variety of health devices, wearable technologies, games, and apps, and we will take some campus-based field trips to research centers developing new ones. Participants will also create and present designs for their own health-related technologies of the future! This is an ideal camp for youth interested in keeping fit and healthy, health careers, and technology design.

# Camp Descriptions

## **HIGH VELOCITY**

### **Beginning Robotics, Grades 1-2**

During this week of camp, you will design, build and program your own WeDO 2.0. We will focus on the elements of design, testing your ideas and redesigning your robot until it meets your high standards. We will also have other engineering and design challenges throughout the week. Even if you have no previous skills building or programming robots you will be able to have a robot up and running the very first day.

### **Exploring the Microscopic World, Grades 7-8**

During this amazing camp, students will take a whirlwind tour of the vast and incredible microscopic world. Campers will begin by working together to design their own simple version of a microscope. After creating and showing off their designs, students will learn about different kinds of microscopes and will learn how to use a microscope themselves to navigate and explore the tiny unseen world around us. Through hands-on activities, students will explore the diversity of microscopic organisms such as fungi, bacteria, and protozoans and will also learn about the vast impacts of microorganisms on our society, our bodies, and a few of the world's many ecosystems.

#### **\*Additional Camps Coming Soon!**

*\*Parents will be notified via email of new camp additions.*

## **July 30 – August 3**

### **STEM Make-It Take-It, Grades 1-2**

Campers will be participating in STEM design challenges, and will be able to take each project home daily. They will be designing and creating balloon cars, air blasters, spinning toys, and more!

### **The World of Bugs, Grades 1-2**

This is an active camp that will combine outdoor exploration, recreation and hands-on activities for our young campers. Throughout the week campers will discover how amazing and valuable bugs truly are. They will collect insects, perform experiments and activities with the insects and more. Collecting trips are interspersed with a series of fun projects and activities.

This is the perfect camp for bug lovers and enthusiasts!

### **Competitive Robotics, Grades 6-8**

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## **Making with Multimedia, Grades 6-8**

In this course, campers will explore how to create vector art, a common industry media format, and how it can be used. Common projects include, but are not limited to, video game design, silk screens, 3d printing, and silk screens. Campers are encouraged to bring in their own ideas!

## **Rube Goldberg Apparatus, Grades 6-8**

A Rube Goldberg machine is a simple machine that accomplishes a simple task in as complicated a way as possible. Campers utilize their knowledge of simple machines and basic physics to demonstrate creativity and complexity while entertaining everyone observing it in action. If campers have ever played the game "Mouse Trap," they have used a Rube Goldberg apparatus.

## ***HIGH VELOCITY***

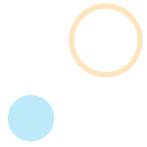
### **Beginning Robotics, Grades 2-4**

During this week of camp, you will design, build and program your own WeDO 2.0. We will focus on the elements of design, testing your ideas and redesigning your robot until it meets your high standards. We will also have other engineering and design challenges throughout the week. Even if you have no previous skills building or programming robots you will be able to have a robot up and running the very first day.

### ***\*Camps Coming Soon!***

*\*Parents will be notified via email of new camp additions.*





# Our Amazing Camp Instructors

We are pleased to share that all of our instructors are credentialed teachers with extensive experience in their respective STEM subject area. Each camp of 25 campers will also have a counselor. Our dynamic and caring counselors are all UC Davis students. Our staff works hard to make sure everyone has a very fun and educational experience!

## Additional Services

In order to accommodate everyone's busy schedule, we will offer extended care both before and after the regular camp day. Here's what we offer:

- 7:30–8:30 a.m. – Extended Care, \$25 per week
- 2:00–6:00 p.m. – Extended Care, \$75 per week
- 2:30–5:30 p.m. – High Velocity Camps, \$195 per week  
(early-bird discounts apply)

For campers enrolled in High Velocity camps, they will be supervised from 2-2:30 p.m. and again from 5:30-6 p.m. There is no extra cost for this additional time.

**Register early and save!**



<https://www.regonline.com/builder/site/Default.aspx?EventID=2167996>

