Fall 2020 CTD Encounters at Home

CTD Encounters at Home single-day classes offer a deep dive into a high interest topic. During the live, online sessions, instructors lead demonstrations, engaging discussions, and hands-on explorations where students can engage with like-minded peers. CTD Encounters at Home is open enrollment; no documentation (test scores or portfolio) is needed to enroll.

**Days:** Saturday and Sunday options  
**Times:** 9 a.m. - 12:30 p.m. Central Time  
**Tuition:** $75  
**Application:** visit my.ctd.northwestern.edu to begin your application

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**Boats: Physics & Engineering**  
**Grades 3 & 4**  
How do boats stay on the surface of - and move through - water? Why do some sailboats have many sails and others only have a few? Explore the laws of physics that keep boats afloat, and propel a ship's motion. Through inquiry and research, students investigate these questions and collaborate together to design, build and test their own model boats.

**Volcanoes: Formation & Prediction**  
**Grades 3 & 4**  
Since it was formed 4.5 billion years ago, Earth's surface has been continually reshaped by the hot, churning magma that lies just beneath its rocky crust. Explore the violent but valuable history of volcanism on Earth. Discover what causes volcanoes to form, why they tend to cluster in certain geographic areas, and how scientists monitor activity and predict eruptions. While learning about hot spots, students model the formation of the Hawaiian islands and discuss the past and future of the Yellowstone supervolcano.

**The Biology & Chemistry of Bioluminescence**  
**Grades 5 & 6**  
Bioluminescence can be observed in nearly every ecosystem on Earth, but most of all in the world’s oceans. In this course, students explore the natural history, evolution, and biochemistry of the organisms that dazzle us with light! Bring your curiosity as we investigate the science of bioluminescence, and how and why it is used in nature.

**Finding Patient Zero: Intro to Infectious Disease**  
**Grades 7 & 8**  
Have you ever wondered how scientists are able to identify when and where a disease first started? In this highly collaborative online workshop, students have a chance to role play a physician and diagnose infections based on patient history and laboratory results. Students then work together to identify the source of an outbreak through the interpretation of screening tests and contact tracing. Throughout the workshop, students learn and apply fundamental information about how infectious agents cause disease in humans, how to detect these pathogens, and how to ultimately treat these infections.

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**Surviving & Thriving: Adaptations of Prey Animals**  
**Grades 3 & 4**  
How do prey animals adapt to their environments and survive in a dangerous world of predators and limited resources? Through hands-on investigations and active discussion, students learn about the incredible diversity of the animal kingdom and the unique adaptations that animals have to their environments. Uncover behaviors and adaptations that animals have to claim territory, find food, avoid predators, find mates, and raise their young.

**Cephalopod Evolution & Anatomy**  
**Grades 5 & 6**  
What characteristics have allowed cephalopods to survive for over 500 million years? How have they evolved to be as intelligent as the family dog? Investigate how cephalopods change color and shape shift, how they use jet propulsion to swim as fast as a leopard seal, and why they evolved intelligence. Students model how cuttlefish change the texture of their skin, and observe the fascinating internal and external structures that make cephalopods truly unique.

**Computational Modeling: Understanding the World Around Us**  
**Grades 7 & 8**  
Why are fast-food restaurants often very close to each other? Why do some forest fires burn out while others persist? How does one infectious disease become a pandemic, but not others? Computational modeling helps scientists, economists, health care professionals, and others more deeply understand such complex questions about the social and natural worlds. In this hands-on workshop, students learn the basics of the NetLogo agent-based modeling environment, create their own computational models and analyze the data those models produce in order to understand the world around us more deeply.

**Sinking Your Teeth into Human Evolution**  
**Grades 7 & 8**  
What role has the human diet played in driving the emergence of our species? Through interactive presentations and hands-on activities, students learn about some of the major transitions in human evolution. Analyze teeth shape, understand their function, and take measurements of mammalian skulls and teeth. Discuss primary research in small groups.