

USI DISCOVERY LAB LESSON CATALOG



INTRO TO CODING: USING SPHERO INDI CARS TO LEARN BASIC COMPUTATIONAL THINKING

Get ready for a high-energy coding adventure! Students will command colorful Sphero Indi Cars through mazes and obstacles, unlocking the magic of basic computational thinking with hands-on play that boosts problem-solving skills and ignites a lifelong love for tech.

Standards: K-2. CD.2, K-2.DI.3&4, K-2.PA.1&4



SAIL AWAY: EXPLORE AN INVISIBLE PUSH WITH LEGO BRICQ MOTION

Set sail on an exhilarating exploration of forces! Students harness the power of wind and motion with LEGO BricQ sets to build and test sailboats, discovering invisible pushes that make things move—perfect for budding scientists eager to experiment.

Standards: K-2. CD.2, K-2.DI.3&4, K-2.PA.1&4



BUSY BEAKS: AN EXPLORATION OF SURVIVAL ADAPTATIONS

Dive into the wild world of bird survival with this feathered frenzy! Students investigate how different beak shapes help birds thrive, simulating adaptations through fun experiments that will have them chirping with excitement about nature's clever designs.

Standard: 1.LS.2



MAGGIE'S WHEELCHAIR: A LEGO DESIGN CHALLENGE

Spark creative problem solving in little engineers! In this heartwarming challenge, students use LEGO bricks to design and build a custom wheelchair for "Maggie," tackling real-world mobility problems while fostering innovation, empathy, and early engineering skills.

Standards: K-2.KETS1.1-3



THE LIFE OF A FROG: FORMS AND FUNCTIONS OF OUR FAVORITE AMPHIBIAN

Hop into an amphibian adventure that's leaps and bounds above the rest! Students explore the fascinating life cycle and unique features of frogs, from tadpole transformations to survival tricks, in a hands-on journey that brings biology to life!

Standard: 2.LS.3

GRADE 3



POLE-D TOGETHER: MAGNET INTERACTIONS

Attract excitement with magnetic mysteries! Students dive into the captivating world of magnets, experimenting with pushes, pulls, and invisible forces to uncover cause-and-effect relationships that will repel boredom and pull in endless curiosity.

Standard: 3.PS.3



HOLEY-MOLEY: A LESSON ON PERIMETER

Putt your way to math mastery in this hole-in-one design challenge! Using perimeter as the ultimate constraint, students craft their own mini golf holes with a set par, blending geometry, creativity, and engineering for a game-changing experience that's sure to score big on fun.

Standards: 3.M.6, 3.5.ETS1-3

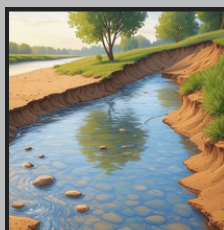
GRADE 4



KINETIC ENERGY: IT'S ALL DOWNHILL FROM HERE

Rev up the excitement with high-speed science! Students launch Hot Wheels cars down ramps of varying steepness, racing to connect slope, speed, and kinetic energy in an adrenaline-pumping investigation that accelerates learning like never before.

Standard: 4.PS3.1



DON'T GET WORN DOWN BY EROSION: EFFECTS AND SOLUTIONS

Battle the forces of nature in this earth-shaking erosion showdown! Students measure the dramatic effects of water, wind, and more, then engineer ingenious solutions to combat erosion—transforming potential disaster into a fun display of problem-solving genius.

Standards: 4.ESS2.1, 3.5.ETS1.2

GRADE 5



DWHAT'S THE MATTER WITH STEALING COOKIES?: PROPERTIES OF MATTER, WHO-DUNNIT STYLE

Crack the case in this deliciously mysterious matter mayhem! Students turn detective to identify materials by their properties in a cookie-theft whodunnit, blending observation, measurement, and suspense for a lesson that's as fun as it is educational.

Standard: 5.PS1.3

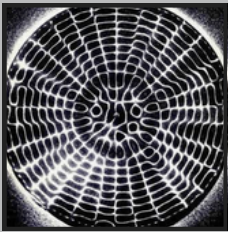


A FLOOD PREVENTION DESIGN PROJECT

Save the day in this paw-some flood rescue mission! When a doghouse faces rising waters, students engineer bold solutions to protect it, exploring Earth's systems while designing with criteria and constraints—guaranteeing a wave of excitement and heroic innovation.

Standards: 5.ESS2.1, 3.5.ETS1.1-3

GRADE 6



TONE DOWN THOSE WAVES: WAVE DEMONSTRATIONS AND EXPERIMENT

Ride the wave of discovery in this dynamic demo and experiment extravaganza! Students manipulate waves through hands-on activities, exploring amplitude, energy, reflection, and more—turning abstract physics into an electrifying experience that resonates with every learner.

Standard: MS.PS4.1-2



#YESFILTER: AN APPLICATION-BASED WATER FILTER DESIGN

Filter out the ordinary and dive into eco-engineering awesomeness! Students test water quality and craft custom filters to purify it, merging ecology and design in a real-world challenge that empowers them to protect biodiversity and the ecosystem like true environmental heroes.

Standards: MS.LS2.5, MS.ETS1.1-3

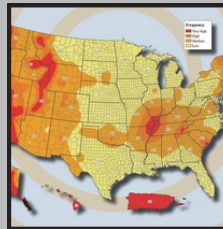
GRADE 7



DON'T CRASH OUT OVER NEWTON'S THIRD LAW: USING THE DESIGN PROCESS TO OVERCOME IMPACT

Brace for impact in this action-packed Newton's Law thriller! Students apply the third law to engineer crash-protection devices, designing solutions for colliding objects that turn potential smash-ups into demonstrations of motion mastery and ingenuity.

Standards: MS.PS2.1



ALL SHOOK UP: DESIGNING AN EARTHQUAKE PROOF BUILDING

Shake things up without breaking a sweat! Students analyze natural hazards data to forecast earthquakes and engineer resilient buildings, iterating designs to withstand seismic forces in a groundbreaking challenge that builds confidence and foresight.

Standards: MS.ESS3.2, MS.ETS1.1-4

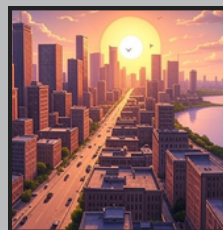
GRADE 8



MR. GENETICS HEAD: A POTATO HEAD-BASED CASE STUDY

Assemble the family tree of traits in this spud-tacular genetics quest! Using Mr. Potato Head as a fun model, students explore inheritance through sexual and asexual reproduction, unraveling the secrets of genetic variation with models that make biology irresistibly fun.

Standard: MS.LS3.2



IT'S GETTING HOT IN HERE: REDUCING URBAN HEAT SINKS

Cool down the concrete jungle in this sizzling urban design showdown! Students prototype city layouts to combat heat islands, applying science to minimize environmental impacts and create sustainable solutions that will heat up their passion for eco-innovation.

Standards: MS.ESS3.3, MS.ETS1.1-2

Questions? Contact us at: stem.center@usi.edu