

2026-2027 SCHOOL YEAR

SCIENCE & ENGINEERING

COMPUTER SCIENCE & ROBOTICS

7th/ 8th	2026-2027		2026-2027	
	Life Science	CHATFIELD ECOLOGY Ecosystems This unit frames the study of aquatic ecology and trophic dynamics within the context of environmental engineering and sustainable water resource management. Students will conduct a field-based ecological study of the reservoir to assess its health, specifically focusing on trophic interactions, invasive species, and ecosystem services. • Trophic dynamics • Species interactions • Conservation ecology • Invasive species	Digital Media	GAME-READY ASSETS 3D Modeling Students dive into 3D modeling, focusing on creating assets optimized for virtual environments. They learn to navigate the interface and create unique models from basic shapes. Students master object manipulation (moving, scaling, rotating) and apply materials, colors, and textures to surfaces. Students learn essential rendering techniques, including creating realistic lighting and shadow effects and using nodes for advanced visual effects, culminating in a final render of their models. • 3D modeling • Object manipulation • Materials, colors, and textures • Lighting and shadow effects • Rendering a final image view
		WAVES IN MEDICINE Waves & Human Body Systems Students investigate the fundamental physics of waves and how they power cutting-edge medical technologies for diagnosis and healing. They develop a concept for a needed futuristic medical device that could safely manipulate structures or detect issues inside the body. Students use models to predict how their waves interact with internal tissues and apply data to justify why a reliable digital control system is essential for the technology's success. • Signal and wave dynamics		INTRO TO PYTHON Programming Students begin text-based programming by writing Python code that takes user input via the input() function, saves that data in variables (strings), and processes it to create new output. They learn foundational Python syntax to avoid errors and use the print() function for display. Students develop a program plan using pseudocode and practice formatting their final output with f-strings to create and enhance interactive stories and console applications. • Python syntax and error avoidance
	Biomedical Science		Text-Based Programming	

		- Cell structure and function - Tissues and organs - Human body systems		- User Input (using input()) - Variables (storing strings/data) - Output (using print() and f-strings) - Pseudocode (program planning)
	Physical Science	CONCERT AUDIO ENGINEERING Electric and Magnetic Fields Students investigate electric and magnetic fields in the context of concert audio engineering. They design the massive speaker system and sound setup for a concert venue, focusing on how electricity is powerfully converted into sound. Students model the speaker's magnetic forces, design power strategies for thousands of watts of current, and map field interactions to ensure concert audio is clear and powerfully covers the entire audience. - Electric and magnetic fields - Field strength and current - Field interaction and force - Electromagnetism as a transducer	Text-Based Programming	PYTHON PROGRAMS Mathematical Algorithms Students focus on mathematical algorithms by writing interactive Python programs that perform calculations. They learn to manage different data types (integers and floats) to store numbers, prices, speeds, and distances. Students practice casting user input to the correct data type for calculation, use operators to compute results, and apply augmented operators to update variables (like scores). Students learn proper formatting using the \n character for line breaks and the round() function for precision. - Integers and floats - Casting - Mathematical operators - Augmented operators - Rounding and output formatting
	Aerospace Science	SPACE MISSIONS Earth-Sun-Moon System, Gravity, & Scale Students investigate the critical role of gravity, scale, and orbital patterns in planning an interplanetary space mission. They explore how the cyclic patterns of the Earth-Sun-Moon system determine launch windows, how gravity dictates all motion within the solar system, and how scientists analyze and interpret data to comprehend the immense scale properties of planets and their moons. Students are mentored by aerospace engineers to design a realistic space mission. - Gravitational forces - Earth-sun-moon interactions - Scale properties	Physical Computing	RASPBERRY PI AND AIY Input/Output Systems, Scripting, and AI Students advance Python skills to control the Raspberry Pi's GPIO pins and explore Artificial Intelligence using AIY kits. They initially wire LEDs and basic sensors (Flame, RGB) on a breadboard to build foundational I/O systems. Students use AIY hardware to perform real-time machine learning tasks (like object recognition or voice commands), writing Python scripts that execute tasks and process complex sensor data using pre-trained AI models. - Physical computing with Raspberry Pi - GPIO control - AIY kit integration - Intro to machine learning - Python scripting for AI applications

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7th/ 8th	Biomedical Science	GENETIC ENGINEERING Genetics and Heredity Students investigate the cellular cause of a rare genetic disease to solve the problem of limited treatments. They work with experts to understand the disease process and design a new gene therapy solution. Students use knowledge of genetics and development to find the faulty gene and engineer a safe delivery vehicle. - Embryological development - Genetic variation - Molecular and cellular basis of heredity	2D DIGITAL MEDIA Graphic Design Students use 2D design software to create and edit images. They master core techniques, including layer management (duplicating, arranging, stacking layers) and combining multiple images into complex compositions. Students learn to apply various filters and effects (lighting, gradient flare), use a layer mask for selective colorization, and adjust image attributes like color and saturation to create polished, themed creations such as movie posters. 2D modeling - Layer management - Filters and effects (Artistic, lighting, gradient) - Selective colorization (Layer mask) - Adjusting image attributes
	Physical Science	MAGICAL EFFECTS Energy and Forces Students investigate fundamental physics principles to solve the creative challenge of designing magical illusions and special effects for movies and theme parks. They engage in activities to understand how effects from Harry Potter and Star Wars are rooted in the precise control of motion and energy. Students apply Newton's Laws to simulate levitation, and use thermal energy concepts to engineer illusions like instant ice or controlled fire. Thermal energy and particle motion	MULTI-SCENE GAMES Programming Students advance their coding by using conditional statements (if/then) to create branching code and determine program flow. They learn to store information using Boolean variables (true/false) and number variables. Students learn to create multi-scene projects, mastering the code necessary to link scenes and pass CoSpace properties between them. This allows students to create complex narratives and interactive experiences with unique character responses and persistent data across scenes.

		• Newton's Laws • Forms and transfer of energy		• Branching code logic • Boolean and number variables • Multi-Scene design • CoSpace properties • Creating complex, non-linear narratives
	Life Science	BIGHORN RESCUE Anatomy & Conservation Students step into the role of conservation scientists to address the crisis facing the Bighorn Sheep. Using fossils and comparative anatomy, they identify crucial survival adaptations. Students analyze genetic variation to predict the herd's survival potential. They use this data to develop and propose actionable conservation strategies to mitigate human-induced environmental pressures and protect the species. • Fossil record • Anatomical structures • Survival potential	Robotics	SENSOR ALGORITHMS & AUTONOMOUS CONTROL VEX Robotics Students advance to complex autonomous coding by integrating advanced sensors (optical and distance). They program the robot to interpret environmental data (color, distance) and use conditional logic to make sophisticated, autonomous decisions. Students implement complex algorithms and feedback loops to solve collection and navigation challenges. • Advanced sensors • Autonomous coding and algorithms • Conditional logic based on sensor data • Color recognition, distance calculation • Feedback loops and complex problem-solving
	Meteorological Science	FLIGHT CONTROL Weather and Forces Students investigate the science of air masses and fluid physics to solve the challenge of flying safely through complex weather. They become mission planners, designing resilient flight systems and protocols for planes and drones. Students model aircraft components to handle stress, develop automated logic for instant hazard avoidance, and optimize routes using jet streams for safe, efficient travel. • Air masses • Weather and climate • Atmospheric circulation • Natural weather hazards • Forces of flight	Game Design	DIMENSIONS WITH VIRTUAL REALITY Advanced Programming Students advance their programming by managing multiple data types (strings, numbers, and booleans) and using variables to store and call information. They learn to programmatically manipulate objects by controlling their movement (moving in a direction or along a path) and rotation using CoBlocks. Students integrate these skills to create dynamic gaming scenes with characters that animate, speak dialogue, and perform multiple actions simultaneously. • Strings, numbers, booleans • Programmatic object manipulation • Character dialogue and animation • Run parallel blocks • Using math operators to change variable values