

Course Title:	Stem: Grade 4
Grade(s):	Grade 4

Course Description
In Grade 4, STEM moves from simple exploration to complex systems. This course overview integrates Earth Science, Physical Computing, and Mechanical Engineering, all tied together by a year-long emphasis on teamwork and the "Engineering Design Process."
Approved Curricular Materials/Textbook(s)
Code.org : Course E VEX GO Micro:bits Tinkercad Bridges in Mathematics 3rd edition Qweebi

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: Team Building/Engineering	Students use various materials to build, problem solve, and work together to solve challenges. Students will: • Cooperatively work with others to solve a problem • Collaborate, troubleshoot, and improve their work	4 weeks (September.-October)
Unit 2: Coding	The course begins with an introduction to the Sprite Lab programming tool. Students will learn to make fun, interactive projects. Following these lessons, students will engage in more complex coding. Students will learn about nested loops, functions, and conditionals. By the end of the course, students will combine these concepts to solve challenging puzzles. The course ends with a game jam	7 weeks (October-January)

	where students create a game and share it with their classmates. Students will: • Identify repetitive patterns and "wrap" them into a named Function • Begin to understand that code can "remember" information	
Unit 3: Science-Simple Machines	This unit moves beyond simply identifying tools to understanding the physics of work. In Grade 4, students learn that simple machines don't reduce the amount of work needed; they change the force or distance required to get the job done. The unit culminates in the Rube Goldberg Challenge, where students must chain these machines together to solve a "problem." Students will: • Demonstrate how energy moves from one object to another to perform a task • Integrate at least three different simple machines into a single working system • Design a sequence where one action triggers the next without human intervention	5 weeks (January-February)
Unit 4: Technology-3D Printing	In Grade 4, 3D Printing is where students' digital ideas become physical reality. Using Tinkercad, students move from being "builders" with physical blocks to "designers" in a 3D digital workspace. Students will: • Move beyond "stacking" shapes to creating complex forms through subtraction • Design objects that meet specific real-world dimensions • Master the 3D workspace by viewing their model from all angles	3 weeks (March)
Unit 5: Circuits & Electricity	In Grade 4, the integration of Snap Circuits and micro:bits shifts from basic connectivity to Automation and Smart Systems. Students stop thinking about "turning things on" and start thinking about "programming systems to react." Students will: • Build circuits where the micro:bit acts as a logic gate rather than just a	4 weeks (March-April)

	power source • Use the micro:bit's internal sensors to drive physical hardware • Track how electrical energy is converted into different forms within their builds • Systematically isolate failures in a combined system	
Unit 6: Playground Design	Adapted Bridges in Mathematics Unit 8: In this final unit of the year, students design and build scale model playgrounds that incorporate simple machines. They investigate simple machines in playground equipment and conduct research to help them make decisions about safety issues. They then survey the school community to find the most important playground items to use in their designs and use graphs to visualize the data they collect. Students use the information to create a scaled map of their designs, from which they build a scaled three-dimensional model. They also discuss the needs of plants and plant a model grassy field in preparation for finding the scaled measurements and cost for planting a life-sized field. They work with mass, liquid volume, area, and perimeter during this portion of the unit. A Playground Model Showcase gives students an opportunity to prepare their work for sharing with their peers. Students will: • Investigate simple machines, collect measurement data, and compare results • Collect and analyze data to make decisions • Use what they've learned about scale to build a 3-D scale model of their playground design	5 weeks (May-June)