2026-2027 4th Grade STEAM Scope and Sequence

Unit (Title)	Duration	Essential Questions	Key Learning Outcomes	Standards
Unit 1: *Computer Programming*	20-29 Days	- What is programming and how is it used in daily life? - How is code a language for solving problems? - Why is planning important before writing code? - How can different algorithms achieve the same outcome? - How do loops and conditionals improve programs? -What is the difference between private and personal information, and why does it matter online? -How can designers build technology that works for everyone?	- Explain programming and real-world applications - Describe code as a communication system - Plan algorithms before coding - Develop programs using sequence, events, iteration, and conditionals - Write multiple solutions for the same problem - Debug programs using structured strategies - Design and create an interactive program (game, story, or tool)	**CSTA 2026** **Algorithms & Design** - E4-ALG-01 - E4-ALG-03 **Programming** - E4-PRO-04 - E4-PRO-06 - E4-PRO-07 **Systems & Security** - E4-SAS-12 **PA STEELS** - 3.5.3-5.A - 3.5.3-5.C - 3.5.3-5.K - 3.5.3-5.W **CEW** -13.1.3-5.A -13.2.3-5.A -13.2.3-5.C -13.2.3-5.D -13.4.3-5.B

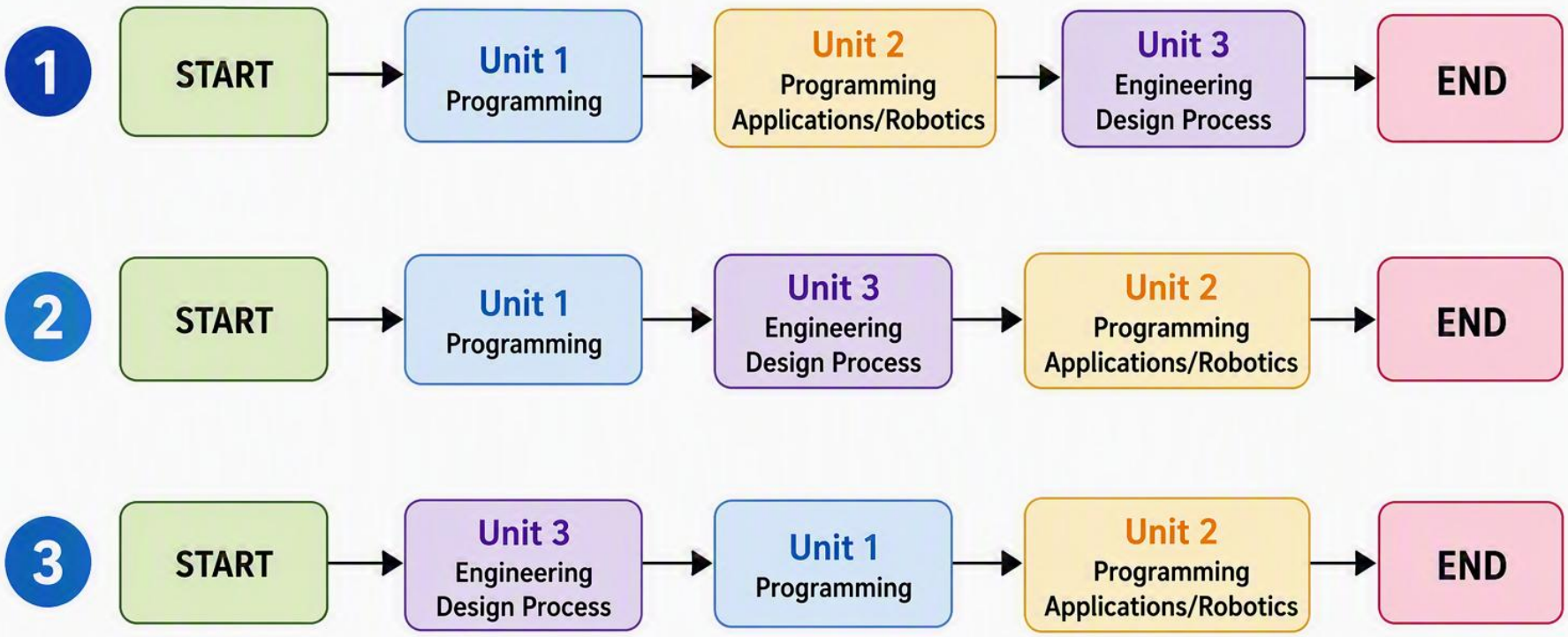
Unit 2: *Robotics*	15-20 Days	- How do robotic systems use sensors, motors, and code together? - How do inputs, processes, and outputs interact within a system? - How can conditionals and loops improve robotic behavior? - How do we design efficient robotic solutions to challenges? - How do robots impact the way people live and work?	- Analyze robot systems (input → process → output) - Build and modify robot models to meet design goals - Program robots using sequence, loops, and conditionals - Use sensor input (distance, color, force) to control robot decisions - Compare multiple programming solutions for efficiency - Debug and refine robotic systems using testing cycles - Apply robotics to solve complex, multi-step challenges	**CSTA 2026** **Algorithms & Design** - E4-ALG-01 **Programming** - E4-PRO-04 - E4-PRO-05 - E4-PRO-07 **Systems & Security** - E4-SAS-12 - E4-SAS-14 **Data & Analysis** - E4-PRO-08 **Computing & Society** - E4-CAS-17 **PA STEELS** - 3.5.3-5.L - 3.5.3-5.BB - 3.5.3-5.DD - 3.5.3-5.I - 3.5.3-5.K **CEW** -13.4.3-5.B -13.1.3-5.D -13.1.3-5.C -13.2.3-5.A -13.3.3-5.D -13.2.3-5.C

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Unit 3: *Engineering Design Process*	16-20 days	- How does the engineering design process support solving real-world problems? - Why are constraints and criteria important in design? - How does collaboration improve solutions? - How do we test and refine designs based on evidence?	- Apply the full engineering design process (define, imagine, plan, create, test, improve) - Design solutions that meet criteria and constraints - Collaborate to develop and refine ideas - Use evidence from testing to improve designs - Communicate and justify design decisions	**PA STEELS** -3.5.3-5.A -3.5.3-5.C -3.5.3-5.I -3.5.3-5.L -3.5.3-5.M -3.5.3-5.N -3.5.3-5.O -3.5.3-5.P -3.5.3-5.Q -3.5.3-5.R -3.5.3-5.S -3.5.3-5.T -3.5.3-5.U -3.5.3-5.V -3.5.3-5.W -3.5.3-5.X -3.5.3-5.Y -3.5.3-5.BB -3.5.3-5.HH **CEW** -13.4.3-5.D -13.4.3-5.A -13.2.3-5.C -13.2.3-5.E
Primary Learning Resources: **Code.org, Course E (2025)** **Finch Robot** **LEGO Spike Essential** **LEGO CS+AI** **STEAM Design Challenge Catalog** **Discovery Education**				

VALID TEACHING ORDER PATHS

(Unit 2 can never come before Unit 1)



In every path, Unit 1 (Programming) always comes before Unit 2 (Programming Applications/Robotics).