5th Grade STEAM Scope & Sequence

Unit (Title)	Duration	Essential Questions	Key Learning Outcomes	Standards
Unit 1: *Computer Programming*	20-25 Days	- What is programming? - Who uses programming? - How is code a language? - How does code impact daily life? - Why is planning important before coding? - How can multiple algorithms achieve the same goal? - How do loops, conditionals, functions, and variables support game design? - How can computer simulations model real-world situations? - How does artificial intelligence learn, and what role does human bias play? - Why are human-centered design and ethics important in computer programming?	- Explain programming and its real-world use - Describe code as a communication system - Plan algorithms before implementation - Develop multiple solutions to a problem - Debug and improve code - Use loops, conditionals, functions, and variables - Design an interactive game	**CSTA 2026** **Algorithms & Programming** -E5-ALG-01 -E5-ALG-02 -E5-ALG-03 -E5-PRO-04 -E5-PRO-05 -E5-PRO-06 -E5-PRO-07 -E5-PRO-08 **PA STEELS (Engineering & Technology)** 3.5.3-5.A 3.5.3-5.C 3.5.3-5.I 3.5.3-5.L 3.5.3-5.N 3.5.3-5.O 3.5.3-5.P 3.5.3-5.S 3.5.3-5.BB 3.5.3-5.HH **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

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Unit 2: *Robotics*	15-23 Days	- What defines a robot? - How have robots impacted society over time? - How do we use instructions and technical resources to build solutions? - How does programming control physical systems? - How can variables store and track data in a robot program? - How do loops and conditionals help robots make decisions? - How does AI learn? - What happens when AI is trained on biased data? - How do ethics and human-centered design apply to AI? - What career pathways involve robotics and AI?	- Identify core components of robots (input, process, output) - Explain the role of robotics in society - Use manuals and protocols to build and troubleshoot - Program robots to complete tasks - Apply computational thinking to physical systems	**CSTA 2026** **Algorithms & Programming** -E5-ALG-01 -E5-ALG-02 -E5-ALG-03 -E5-PRO-04 -E5-PRO-05 -E5-PRO-06 -E5-PRO-07 -E5-PRO-08 **Data & Analysis** -E5-DAA-09 **Systems & Security** -E5-SAS-12 -E5-SAS-14 **Computing & Society** -E5-CAS-19 **PA STEELS (Engineering & Technology)** - 3.5.3-5.I - 3.5.3-5.K - 3.5.3-5.L - 3.5.3-5.BB -3.5.3-5.DD **CEW** - 13.1.3-5.D - 13.4.3-5.C - 13.4.3-5.B - 13.2.3-5.B - 13.2.3-5.C

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Unit 3: *Engineering Design Process*	12-18 Days	- How does the engineering design process support problem-solving? - Why is collaboration critical in engineering? - Why do engineers test, evaluate, and improve their designs? - How can data and evidence justify design changes? - How do criteria and constraints guide engineering decisions? - How does engineering connect to careers that shape communities?	- Apply the full engineering design process (define, imagine, plan, create, test, improve) - Collaborate to solve authentic problems - Justify design decisions using evidence - Iterate based on testing and feedback	**PA STEELS (Engineering & Technology)** 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 Standards** -13.1.3-5.D -13.2.3-5.A -13.2.3-5.C -13.3.3-5.B -13.4.3-5.A -13.4.3-5.B

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Primary Learning Resources:
Code.org, Course F (2025)
Scratch
Finch
LEGO SPIKE Prime
LEGO CS+AI
CMU SPIKE Virtual Robot
Discovery Education Career Connections

