TOMORROW STEMS FROM IOWA
GOVERNOR'S STEM ADVISORY COUNCIL

STEM SCALE-UP PROGRAM

STEM Scale-Up Program Menu for 2026-27

Scan the QR Code for an electronic version of this information packet, access to hyperlinks and to apply.

STEMwonder

presented by *the Iowa Regents' Center for Early Developmental Education at the University of Northern Iowa*

Description: Carefully curated kits of materials engage students in science and engineering concepts through play-based integrative STEM and literacy experiences that motivate students to use the tools of literacy.

Grade Level: PK-3

Setting: In and/or out of school

Provider Contact:
Beth VanMeeteren
Beth.VanMeeteren@uni.edu

Website:
regentsctr.uni.edu

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Exploring AI and the Future of Work

presented by *CodeJoy LLC*

Description: Provides a focused and engaging learning experience to address classroom AI integration through hands-on activities.

Grade Level: 4-12

Setting: In and/or out of school

Provider Contact:
Susan Willems
susan@codejoy.org

Website:
go.codejoy.org/iastem26

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FIRST Tech Challenge

presented by *the College of Engineering at the University of Iowa*

Description: Students design, build and program robots to compete in events. FTC emphasizes innovation, collaboration, and real-world problem-solving through a team-based competition.

Grade Level: 7-12

Setting: In and/or out of school

Provider Contact:
Rebecca Whitaker
rebecca-whitaker@uiowa.edu

Website:
engineering.uiowa.edu/ftc-stem-scale-program

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About

The Iowa STEM Scale-Up Program

The **Iowa STEM Scale-Up Program** was first developed in 2012 and has helped thousands of Iowa educators deliver exciting units in robotics, coding, engineering design, agriculture, animal science, health sciences and more, reaching up to 100,000 learners each year.

As one of the Iowa Governor's STEM Advisory Council's signature programs, it provides high-quality STEM education programs to PK-12 youth in school and out of school along with training for educators to implement effectively.

Through a legislative appropriation, Iowa STEM supplies educators with a rotating menu of exemplary STEM programs vetted and selected through a rigorous Request for Proposal (RFP) and review process. Educators apply for the opportunity to participate in the program(s) of their choosing. Eligible educators include public and private school teachers, youth organization leaders, informal education professionals, home school associations, licensed child care centers and other organizations who deliver STEM education programming to PK-12 learners in Iowa.

For 14 years, the programs offered each year have fueled innovation and engagement across Iowa. As the program matures, so does the Council's responsibility to strengthen its value and ensure its sustainability.

Meaningful impact takes time:

As the STEM Scale-Up Program enters its 15th year, it is evolving to better meet the needs of Iowa's educators. Beginning in 2026–27, a new three-year model will offer sustained engagement through three program offerings—designed to provide educators with the time, focus, and support needed to create lasting impact.

Educators are encouraged to participate for the full three-year cycle to benefit from deeper learning, stronger support, and the opportunity for ideas to grow and succeed.

Educator Participant Expectations:

All awarded educators are required to:

1. Attend and participate in professional development session(s), as outlined by the program provider in the STEM Scale-Up menu packet.
2. Complete the professional development (PD) survey(s).
3. Complete the educator survey(s).
4. Provide a youth participant list.
   - Informal educators will submit through the Iowa STEM Monitoring Project in the spring.
   - Educators at accredited public and private schools will report students participating in Scale-Up through their Student Reporting of Iowa (SRI) collection each fall and winter.
5. Implement with youth before June 2027.

STEMwonder

Grade level **PK-3**

STEMwonder Professional Learning introduces participants to phenomena their students may already be engaging in on their own through three STEMwonder experiences:

1) Engineering Ramps and Pathways
2) Engineering Images using Light & Shadow
3) Engineering Balance.

Rather than a teacher-directed or textbook-based set of lessons, the open-ended nature of these experiences engages students in hands-on STEM, with carefully curated kits of materials that students can independently and safely use every day. K-3 educators can find time for daily STEM experiences by offering the STEM materials to students during small group reading instruction. A debriefing as the literacy block ends becomes a catalyst for writing. A pilot study found students learning in this integrative setting do as well or better in literacy assessments than students offered only literacy. Professional learning will include tips to implement an integrative approach to STEM and literacy learning. While designed with PK-3 learners in mind, the eager involvement of their teachers in teacher play and of older students and adults in non-school community settings demonstrates a high ceiling for continuous learning.

Iowa Standards Alignment:

View full standards alignment.

Physical Science (PS)

- **K-PS2-1 and 3-PS2-1, 2** - In Ramps & Pathways, the foundation for Newton's cradles is laid using a line of marbles on a piece of track to explore how the force of a moving marble hitting a line of relatively stationary marbles goes through the marbles to move the marble at the end.

Engineering

- **ETS1 & 2** - In Light & Shadow, Gr.1 students document their investigations in a science journal as they use light sources, materials, and screens to design and improve systems of light interacting with a variety of materials.

Numeracy in Mathematics

- **2.MD.B.6** - The balance bar in the Engineering Balance kit is a number line with equally spaced points. As children experiment to find a balance on the fulcrum, they put objects on numbers on the balance bar. In documenting their results, they draw a corresponding number line and use numbers to describe sums of objects placed on one side with the total represented on the other side when balance is achieved.

Professional Development:

Duration

Two six-hour days plus regular communication and collaboration with peers and the instructor through private social media.

Location

In-person, regionally depending on the number of awards

Date(s)

First Day: Between July 1 and October 31

Second Day: Within ninety (90) days of the first professional development day.

Specific dates will be scheduled after awardees are announced.

STEMwonder cont.

Award Provides:

Professional learning that leads to one undergraduate/graduate credit, or 15 clock hours.

An $350 annual educator support payment to cover costs related to time, travel, and meals incurred while attending training sessions. The educator must attend both sessions to receive full payment.

Year One - Engineering Ramps & Pathways

Students make sense of force and motion by posing engineering problems and building unique ramp and pathway designs to move marbles in interesting ways. They use literacy skills to document and share their thinking and ideas, collaboratively or independently.

Materials include:

- unit blocks
- 1-, 2-, and 3-foot lengths of track
- objects to be moved

Year Two - Engineering Images using Light & Shadow

Students make sense of material properties and their response to light while developing spatial sense by posing engineering problems and designing block structures and lighting features, images on a screen and, shadow puppets. Students continue to use literacy skills, supported by teachers who model writing and capture ideas through graphs, charts, lists, and language experience stories.

Materials include:

- Large screen
- Small tabletop screens
- An assortment of rechargeable light sources such as;
  - · LED work lights
  - · Gooseneck lamps
  - · Light pads
  - · Tea lights
  - · Head lamps
  - · Puck lights
  - · Flashlights
- Opaque, translucent, transparent and reflective loose parts such as:
  - · Wooden mini unit blocks
  - · Translucent blocks
  - · 3-dimensional figures
  - · Acrylic mirrors

Year Three - Engineering Balance

Students make sense of the physics of balance by posing engineering problems and designing stable block structures, kinetic sculptures, and multi tiered mobiles. Students continue to develop literacy skills, supported by teachers who document learning through student artifacts and create charts and graphs to communicate student learning to outside audiences. Materials include:

- Everyday objects (e.g. as sticks, spoons, straws, scissors)
- Large motor balance materials
- Group games involving balance
- Wooden mini unit blocks;
- Balance bar, fulcrum, and wooden cubes;
- Pan balance with movable fulcrum and objects to compare;
- Tinker Toys and a pedestal;
- Stabilized pan balance stand, Tinker Toys, clips, a S-hooks, and washers

Awardee Costs:

During Award Period

None

Post-Award Sustainability

None

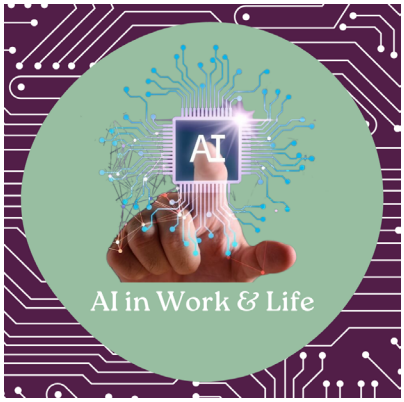
Informational Webinar

- Feb. 5, 2026, 3:30 p.m.
- Feb. 12, 2026, 4:00 p.m.
- Feb. 17, 2026, 4:00 p.m.

Find links to register or join to learn more on Iowa STEM's website. A recording will be made available after the first webinar.

Exploring AI and the Future of Work

Grade level **4-12**



Exploring AI and the Future of Work is designed to address the widespread uncertainty surrounding the integration of artificial intelligence (AI) by providing a focused, hands-on learning experience grounded in safety, sound pedagogy, and real-world relevance. The program includes 12 hours of live, virtual professional development (PD) for educators, with optional curriculum coaching and student engagement experiences available.

The curriculum intentionally connects AI and computation directly to Iowa's strategic economic sectors (Agriculture, Health Careers, Finance, and Manufacturing) ensuring student learning is immediately relevant to their future careers.

Iowa Standards Alignment:

View full standards alignment.

Computer Science

- **2-CS-02** - Participants use the BBC micro:bit, as well as add-on components like a soil moisture sensor, to collect data, then make automated decisions based on that data.
- **3A-IC-29** - Activities on biometric tracking in healthcare and hands-on use of AI models. All uses of these tools will necessarily involve discussions on concerns about data privacy, automated data collection, directly addressing the core ethical and societal discussions in the PD.

Mathematics

- **7.EE.B.3** - Year 1, Session 2 (AI in Healthcare): The micro:bit is used as a tool to model biometric data (exercise tracking). Analyzing and troubleshooting this sensor data to ensure the model is "reasonable" and accurate, particularly when dealing with fractional or decimal units of time/steps/gestures, requires participants to use tools strategically and assess the reasonableness of answers in a multi-step, real-life problem.

Science

- **6-PS4-3** - Year 1, Session 4 (GenAI & Entrepreneurship): The use of a micro:bit to log and transmit data and the development of custom AI models (digitized information) inherently involve working with digitized signals. The PD helps teachers frame the reliability, function, and purpose of these digital tools for information transfer, meeting the standard's focus on integrating technical information about digitized signals.

Professional Development:

Hands-On, Minds-On Training: Sessions center on developmentally appropriate, tangible projects using reusable tools (micro:bits, FarmBeats kits, Google Teachable Machine, micro:bit CreateAI, and PlayLab) to demystify abstract AI concepts.

Year 1

Four three-hour live virtual sessions (12 hours total)

- Session 1: AI in Life and Work
- Session 2: AI in Healthcare
- Session 3: AI in Agriculture
- Session 4: GenAI and Entrepreneurship

Year 2

Two three-hour live virtual PD sessions, (six hours total)

- Session 5: AI and Manufacturing
- Session 6: The AI Design Cycle

Year 3

Two three-hour live virtual PD sessions, (six hours total)

- Session 7: AI Product Prototyping
- Session 8: Scaling the Vision: Peer Training Toolkit

Specific date will be scheduled after awardees are announced.

Exploring AI and the Future of Work cont.

Award Provides:

An educator support payment of $240 shall be provided to cover costs related to time incurred while attending training sessions.

Materials include:

- Fifteen FarmBeats Kits (Full). Each kit consists of
  - · One micro:bit V2
  - · One USB cable
  - · One battery pack
  - · Batteries
  - · One soil moisture sensor
  - · Two nails
  - · Three alligator clips
- Fifteen FarmBeats motor extension kit. Each kit consists of
  - · One Ring:bit V2
  - · One micro servo
  - · One alligator clip-to-female breadboard wire
  - · One servo extension cable
- Fifteen micro:bit V2 Club Pack. Each Club Pack consists of
  - · One micro:bit V2
  - · One USB Cable
  - · One battery pack
  - · Batteries
- One Lifetime PlayLab Subscription

During each Program Year within the Award Period, participating educators may elect **one** of the following follow-up experiences:

- One half-day educator coaching session, delivered either in-person or live, virtually, to support lesson scope and sequence planning, review of artificial intelligence (AI) policies, or other related instructional needs; or
- Student Experience (Engagement and Demonstration) designed to maximize school-wide capacity, serve as a model for teacher push-in, and build broad excitement for the program.

  · Option A – Live Virtual Shows: Two 45-minute sessions engaging up to 400 students each. Students participate live by submitting code and chat responses that instantly control physical robots and hardware in the CodeJoy studio. This provides a low-stakes, high-engagement school-wide demo for students and co-teaching observation model for educators who are new to the content. It acts as an effective school-wide capacity builder.

  · Option B – Hands-on Virtual Workshop: One two-hour, hands-on workshop sessions for up to 100 students focusing on tools like Google, Teachable Machine or micro:bit CreateAI. This supplements classroom learning by giving students a guided, in-depth dive into AI applications, while providing teachers with a live model for project implementation and content delivery.

Awardee Costs:

During Award Period

Optional: Craft supplies and printing costs for student printables.

Post-Award Sustainability

Additional AAA batteries as needed.

Informational Webinar

- Feb. 17, 2026, Noon

Find links to register or join to learn more on [Iowa STEM's website.](#) A recording will be made available after the first webinar.

FIRST Tech Challenge

Grade level **7-12**

FIRST Tech Challenge (FTC) is a comprehensive STEM engagement program with a proven track record of increasing student interest and achievement in STEM. FTC incorporates hands-on robotics design, engineering challenges, and coding experiences.

FTC empowers students to design, build, and program robots to complete specific tasks of varying difficulties which emphasize innovation, collaboration, and real-world problem-solving through a team-based competition.

FTC Iowa offers a package of goods and services that includes:

- FTC Robotics Kits: Each participating educator receives a complete set of FTC robotics components, including motors, sensors, control systems, and structural parts, enabling hands-on learning and team-based engineering challenges.
- Software & Programming Tools: Access to FTC's programming environment, including Java-based development tools and simulation platforms.
- Curriculum Resources: Standards-aligned instructional materials to support integration into science, technology, engineering, and mathematics courses, as well as CTE programs.
- Mentorship & Support: Access to a statewide network of trained mentors, technical support, and ongoing professional learning communities.
- Competition Infrastructure: Opportunities for students to participate in regional tournaments, fostering engagement, teamwork, and real-world application of STEM skills.

Iowa Standards Alignment:

View full standards alignment.

21st Century Skills

- **Critical Thinking and Problem Solving** - Students engage in the engineering design process, troubleshoot mechanical and programming issues, and iterate solutions based on performance data.
- **Employability Skills** - Students work together to use time efficiently to manage the project including segment tasks into steps, prioritizing steps, and building a timeline for their project.
- **Collaboration and Communication** - Teams work together to design, build, and program robots, practicing effective communication, conflict resolution, and project management.
- **Technology Literacy** - FTC introduces students to industry-relevant tools such as CAD software, block and text-based programming, and sensor integration, preparing them for future academic and career pathways.

CTE Standards

- **Technical Skill Development** - Students learn mechanical engineering, electrical systems, and computer programming.
- **Workplace Readiness** - The program emphasizes time management, leadership, and ethical decision-making,

Science

- **HS-ETS1** - Students define problems, develop models, test prototypes, and refine solutions—core components of the engineering design process.
- **HS-PS1** - FTC challenges require understanding of force, motion, energy transfer, and material properties, which students apply in robot construction and performance analysis.

Cross-Disciplinary

- **Language Arts**: Technical writing, presentation skills, and documentation through engineering notebooks and team portfolios.
- **Social Studies and Business**: Budgeting, marketing, and community engagement through fundraising and outreach activities.

FIRST Tech Challenge cont.

Professional Development:

Training includes hands-on robot building, programming, curriculum integration, implementation and sustainability planning.

Year One

A robust three-day workshop.

Year Two and Three

Ongoing FIRST Mentor Certification and an adaptive training program.

Date(s)

Expected between July 8 - Aug. 14, 2026.

Specific dates will be scheduled after awardees are announced.

Location

In-person

Award Provides:

An educator support payment of $631 shall be provided to cover costs related to time, travel, hotel, and meals incurred while attending the training session.

Year One

- Robotics components such as robot starter builder kit, control and power kit, strafer chassis kit, and tools.
- FTC field accessory set and a complete set of the competition game elements.
- A robot carrying case, modular storage system, and safety glasses.
- Annual registration fees.

Year Two

- Upgraded FTC control system.
- 3D printer and extra filament
- Odometry pods
- Replacement motors
- Extra battery
- Annual registration fees
- Game elements for that season's challenge

Year Three

- Second control system
- Extra filament for 3D printer
- Replacement motors
- Extra battery
- Game elements for that season's challenge
- Annual registration fees.

Awardee Costs:

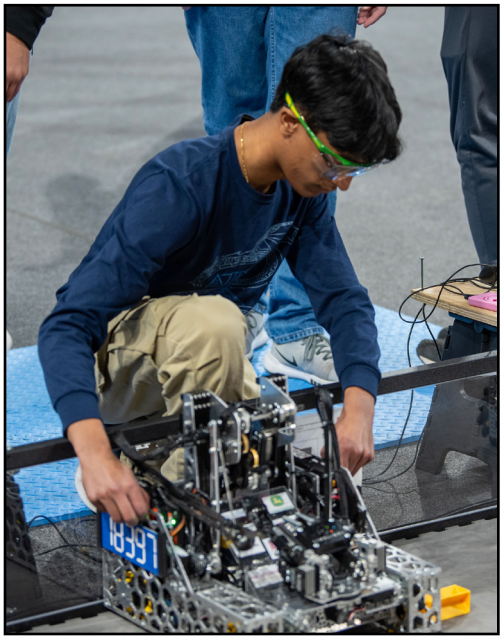
Teams are encouraged to do outreach, fundraising or secure in-kind donations.

During Award Period

- Transportation to events.
- Shirts for participants.

Post-Award Sustainability

- $700-$2,000, on average, depending on how many parts need to be replaced.



Informational Webinar

- Feb. 9, 2026, 3:30 p.m.
- Feb. 10, 2026, 3:30 p.m.

Find links to register or join to learn more on Iowa STEM's website. A recording will be made available after the first webinar.