

STEM Instruction	
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Early College Program Model	
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Mission of the Program/Focus

STEM education unleashes opportunities for students, giving them needed skills to conceive and develop products and processes that will continue to shape the nation and Chicago's economic future. Our goal at Chicago Public Schools is to develop knowledgeable, flexible, and resourceful problem solvers prepared to make the world a better place. To achieve this goal, we must give our students opportunities to:

- Actively make sense of and construct solutions to complex questions
- Productively contribute to a learning community to support a culture of collaboration, risk taking, and innovation
- Regularly reflect on and communicate their understanding of disciplinary ideas

The Early College STEM model also gives students the opportunity to engage in hands-on, real-world learning. Students have access to career-based classes, college-level coursework, and industry experiences in a variety of STEM fields that prepare them for success in college, career, and life.

Key Components

The Early College STEM model consists of five key Program Elements:

STEM Academic Pathways	Opportunities for students to take hands-on classes in STEM fields (e.g., CTE)
Early College	Access to dual credit/dual enrollment classes, with the possibility of earning an associate degree
STEM Enrichment	Significant opportunity to participate in STEM-based learning outside of the classroom
Work-based Learning	Direct contact with and focus on career exposure and awareness, including job readiness programs and STEM internships
School-wide STEM	Instruction* (details below)

These Program Elements hinge on key partnerships:

Industry Partners	City College Partner
<p>School partners with leaders() in the chosen field (e.g., IT) to provide opportunities for students, such as:</p> <ul style="list-style-type: none"> - Financial/in-kind support of the model - Work-based learning/internships - Enrichment, mentoring - Industry vetting of course content & PD 	<p>Schools are matched with a specific CCC partner to provide dual credit and dual enrollment opportunities along a STEM associate degree pathway</p>

*School-wide STEM Instruction

The STEM Standards for Success articulate the critical components for STEM education in Chicago Public Schools. Each standard listed below includes multiple benchmarks that are used to measure program quality throughout the STEM certification process.

1. Mission Driven Leadership
2. School Structures and Culture

3. Institutional Capacity
4. Instructional Approach
5. K-12 Program of Study
6. STEM Career Pathways
7. Family and Community Engagement

Entry Criteria

The majority of CPS STEM Schools are neighborhood schools serving all students within the attendance boundary. The STEM program is present in all aspects of the school, including in-class instruction and out-of-school enrichment opportunities. The STEM approach begins in early childhood to leverage the inquisitive nature of our youngest students and continues through high school to support students in exploring college and career options in STEM fields.

A school's mission and vision should align to the STEM principles listed above.

As Early College STEM will require instructional shifts, specified coursework for students, and provides a school-wide approach to learning, Early College STEM generally is not compatible with other possible academic programs in a school. Preference may be given to schools that do not currently offer other specialized academic programming.

Course Overview and Scheduling

In Early College STEM Schools, all students should have access to four years of mathematics and science instruction. They also have access to career-focused courses through the Career & Technical Education (CTE) program and an increased number of Dual Credit and Dual Enrollment courses through CCC.

Personnel Requirements

Position Needed	Description	Funding Source
STEM Integration Specialist	This Instructional Coach will be an advocate for STEM and will support all teachers in integrating content and practices across subject areas.	Provided by Department of STEM
STEM Program Manager	The Program Manager is responsible for the implementation of the non-instructional portions of the ECSS model, including partnerships, enrichment, and early college.	Provided by Department of STEM
Technology Coordinator	It is <i>highly recommended</i> that STEM Schools invest in a full time TechCo due to the increase in devices and equipment in STEM schools.	School

Funding Requirements

Item	Cost	Funding Source
Makerspace	~\$150,000 (facility upgrade, technology, and curriculum)	Provided centrally or through corporate sponsorship
Professional Development (Recommended Extended Day & Sub coverage)	Varies based on need and school size	Various Sources - The Department of STEM will provide sub coverage and some extended day funding to support teacher participation in STEM professional learning opportunities. It is recommended that schools set aside additional funds.

Professional Development

Type of PD Needed	For Whom	Funding Source
STEM Specialists PLC: Typically monthly PLC to build capacity to support school with progress toward the STEM Standards for Success.	All STEM Specialists	Provided by Department of STEM
STEM Teacher PD Hours: All STEM School teachers are expected to engage in at least 30 hours of STEM-related PD per year	All teachers at STEM Schools	various sources
STEM Administrators PLC: 4 sessions in Year 1 focused on STEM mission & vision, building an aligned budget, CIWP development to support STEM, and a professional learning strategy to support STEM capacity and culture across the building.	All new STEM Administrators, Program Managers, and Specialists	Provided by Department of STEM

Impact & Implementation

If implemented with fidelity, here are the impacts on teaching and learning:

Category	Impact
Instruction	All classroom instruction will regularly incorporate opportunities for students to engage with content through the 4 C's (creativity, critical thinking, collaboration, communication). Instruction will be interdisciplinary in nature and support students in making connections across complex ideas.
Curriculum	Lessons and units will allow students to apply understanding from multiple disciplines and integrate skills across content areas. Curriculum will be standards-aligned, allow for meaningful integration of technology, and support students in designing solutions to complex, real-world problems.
Assessment	A variety of classroom assessments will be used to measure student learning, including authentic projects and problem-based applications.
College & Career Credentials	Students will graduate with additional college credits and/or career credentials, as well as an increased interest in pursuing STEM fields.

Other Central Office Supports or Involvement

- Central Office leads a STEM Certification process for all STEM schools who have completed the typical four-year STEM Incubation and Implementation plan. Schools receive one of four ratings (Early, Developing, Accomplished, Excelling) through the comprehensive evaluation process aligned to the CPS STEM Standards for Success.
- Central Office shares resources (including potential partnerships, student enrichment opportunities, instructional supports, etc.) directly with schools to expand programming for students.
- Central Office makes funding available to support STEM priorities in each of the STEM schools. These funds are allocated through a yearly budget request process.

Sustainability

STEM Schools require the full commitment of administrators and teachers to sustain the work over time. It is essential that the centrally provided STEM Specialists are not the only advocates for STEM within the school. STEM goals should live within a school's Continuous Improvement Work Plan (CIWP) to ensure that STEM remains a priority in all decision-making at the school level. Additionally, school leaders must consider how they will address needs around technology replacement and upgrades over time.