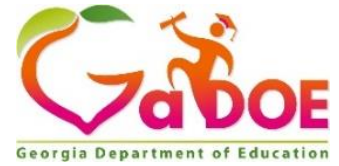


Georgia Department of Education: STEM Certification for High School



Criteria	Continuum		
	Pre-Implementation		Full Implementation
1. STEM Vision and Culture	No vision for STEM education is in place and a STEM culture is not evident in the school.	→	The vision for STEM is clearly defined and a STEM culture has been established within the program and/or school. Students articulate and live this vision and culture through their actions, passions, and perceptions.

Required

- The STEM vision for the school/ program is written.
- High schools can choose between a whole-school model or program only certification. Program Certification is a school-within-a-school model, must be at least 10% of the school population, and represent the demographics of the student body. STEM Program Certification cannot be a program exclusively for gifted and magnet students.
- The school provides evidence that a STEM culture has been established. Schools will decide how to showcase the STEM culture.

2. Required for program certification: Identified STEM Students	No students are identified as STEM.	STEM students are identified, and a selection process is described.	STEM students are identified by a school designed selection process that has been vetted with successful longitudinal evidence.
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Required

- Documentation of how students are selected based upon specific criteria such as interest, lottery, random selection, etc.
- A copy of the STEM application for student entrance into the STEM program.

3. Non-Traditional Student Participation (Not applicable for whole school certification)	The non-traditional student participation does not reflect the diversity (gender, race, ethnicity, and special populations) of the student population.	A plan is being developed for outreach, support, and focus on non-traditional student populations.	A plan is in place for outreach, support, and focus on non-traditional student populations.	The non-traditional student participation reflects the diversity of the school in terms of gender, race, ethnicity, special populations, and academic levels.
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Required

Documentation of [non-traditional student participation](#).

4. Characteristics of the STEM Curriculum	There is no plan for a unique and explicit curriculum in the program or school that is tied to specified CTAE pathways.	A plan is being developed for an explicit and unique curriculum that is tied to specified CTAE pathways. A STEM curriculum is currently	Students are regularly exposed to a unique and explicit curriculum that is tied to specified CTAE pathways and there is evidence of its sustainability (three plus
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		implemented only in some areas of the school.	years) in the program or whole school.
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Required

Written description of the unique characteristics of the STEM curriculum, which must include CTAE courses that support the STEM curriculum.

Example Artifacts

Documented opportunities for:

- student presentations of investigations and findings.
- students to engage in regular “arguments from evidence” during classroom instruction
- students to interact with STEM professionals and community partners to support curriculum
- students to participate in [Career Technical Student Organizations](#) (CTSO’s example: FFA, TSA...)


<p>5. Student Rigor & Relevance and Instructional Quality</p>	<p>Most of the learning occurs at the acquisition level. Content knowledge is taught in a silo by discipline and instruction focuses on knowledge awareness and comprehension of information. Classroom instruction is predominantly teacher centered.</p>	<p>Most of the learning occurs at the acquisition and application levels. Classroom instruction is predominantly teacher centered. Work shows students designing solutions to problems centered on a single discipline at a time by applying knowledge to new situations.</p>	<p>Most of the learning occurs at the assimilation levels. Classroom instruction is predominantly student centered and students extend and refine their acquired knowledge to routinely analyze and solve problems, as well as create unique solutions.</p>	<p>Learning occurs at the adaption level on a regular basis. <i>Classroom instruction is predominantly student centered</i> and students have the competence to think in complex ways and apply the knowledge and skills they have acquired. When confronted with perplexing unknowns, students create solutions and take action that further develops their skills and knowledge.</p>
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Required

Submission of at least two examples of student work that has occurred at the Adaptation level of the [Rigor and Relevance Framework](#)

Example Artifacts

Project examples that demonstrate culture of inquiry, creativity, and innovation exists among students, teachers, and administrators.

<p>6. Professional Learning: Teacher Content Knowledge</p>	<p>None of the teachers are working toward increasing content knowledge.</p>		<p>Teachers are increasing content knowledge through multiple means such as PSC approved endorsements with an emphasis on math and science, content collaboration with business/ industry, post-secondary, and informal education partners, and teacher externships.</p>
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Required

- Documentation for method / procedures for increasing content knowledge for all teachers.
- Documentation of the plan for sustaining content knowledge and induction of new teachers

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High School STEM Certification Continuum

July 2019

Page 2

7. Professional Learning: Instructional Practices	There is no STEM related professional development currently planned and none has been offered in the last year.	Teachers, instructional coaches, and administrators attended at least one STEM professional learning event.	Teachers, instructional coaches, and administrators have on-going STEM-specific professional learning and there is evidence of its implementation in classroom instruction.	Teachers, instructional coaches, and administrators have on-going STEM professional learning and STEM specific strategies relating to the school's identified STEM focus area. There is evidence of implementation in classroom instruction.
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Required

Documentation of STEM specific professional learning for all teachers, instructional coaches, and administrators that incorporates the following:

- Project/problem/place-based learning
- Interdisciplinary instruction
- Investigative research-based practices
- Collaborative planning practices
- 21st Century thinking skills and school-wide use of process-based thinking (Example: Engineering Design Process, Design Thinking, etc)

Documentation of visits to other STEM or STEAM Certified Schools including the school staff that visited and the school location of the visit.

Example Artifacts

Documentation of teacher and administrator participation in district, GADOE, and national STEM professional learning. Examples: GA Department of Education STEM/ STEAM Teacher Academies, GA Department of Education STEM / STEAM Forum, GA Department of Education STEM/ STEAM Leadership Cohort

8. Teacher Collaboration	There is no collaboration or collaboration is not structured or planned.	Teachers collaborate quarterly using Georgia Standards of Excellence to identify learning targets, plan interdisciplinary units, and day-to-day instruction that use process-based thinking.	Teachers collaborate monthly using Georgia Standards of Excellence to identify learning targets, plan interdisciplinary units, and day-to-day instruction that use process-based thinking.	Teachers collaborate at least weekly using Georgia Standards of Excellence to identify learning targets, plan interdisciplinary units, and day-to-day instruction that use process-based thinking.
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Required

- The school administration must provide collaborative planning time at a minimum of once a week.
- Business and community partners participate in teacher planning.
- CTAE teachers are involved in collaborative planning time.
- Documented evidence of weekly STEM collaborative planning time including meeting agendas /minutes and artifacts generated.



Required

- Documentation for the number of students completing and working on a specific CTAE pathway

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High School STEM Certification Continuum

July 2019

Page 3

- School must document work with your district CTAE director

10. Math and Science Instruction	Students do not take high level math and science course work.	25% of STEM students are enrolled in AP or dual enrollment math and science courses. Additional supports are instituted to assist students in meeting these expectations	50% of STEM students are enrolled in AP or dual enrollment math and science courses. Additional supports are instituted to assist students in meeting these expectations	75% of STEM students are enrolled in AP or dual enrollment math and science courses. Additional supports are instituted to assist students in meeting these expectations.
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Required

Documentation of the number of students enrolled and passing AP and/or dual enrollment math and science courses.

11. Business, Community, and Post-Secondary Partnerships	There are no business, community, and post-secondary partnerships.	Plans are being developed to provide student opportunities to meet STEM partners and to participate in STEM learning environments directly connected to in-class learning.	Business, community, and post-secondary partnerships are involved in the STEM instructional program 1-4 times/school year and are directly connected to in-class learning.	Multiple business, community, and post-secondary partnerships are ongoing and are involved by directly connecting to in-class instruction, project/problem-based learning, and exposing students to STEM careers.
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Required

Documentation partnership involvement at all three levels based upon the [STEM Georgia Partnership Involvement Levels](#).

12. STEM Competitions, Exhibits, Clubs, and/or Career Technical Student Organizations (CTSOs)	No students are involved in STEM competitions, on-site STEM exhibits, CTSOs, and/or in state and national STEM forums or clubs.	Some of the students participate in STEM competitions, STEM exhibits, CTSOs, and/or in state and national STEM forums or clubs.	A majority of the students participate in STEM competitions, STEM exhibits, CTSOs, and/or in state and national STEM forums or clubs.
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Required

Documentation that shows how many students participate in STEM competition, exhibit, club, or CTSOs.

13. STEM Curriculum: Project/Problem-Based Learning	Students are not engaged in solving authentic, real-world problems.	Students are engaged in solving authentic, real-world problems, but they are not tied to the local community.	Long-term projects/problems are implemented throughout the school year that are standards-based, interdisciplinary, and engage students with real-world problems in their community.
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Required

- Students can articulate the relationship between math and science concepts in their interdisciplinary projects.
- Written summary of grade level specific, interdisciplinary, problem/project-based learning opportunities that have occurred throughout the school year (curriculum map, timeline, calendar, etc).
- Documentation of how project and problem-based learning connects to Georgia Standards of Excellence.
- Students have documentation of long-term project-based learning in their STEM journals. This documentation includes the use of school-wide process-based thinking.
- Student work created in collaboration with a business/community/post-secondary partner. Partners provide coaching and feedback throughout the project.

<p>14. STEM Curriculum: Day-to-Day Interdisciplinary Instruction</p>	<p>Content areas are taught in isolation.</p>	<p>Students are engaged in interdisciplinary instruction 1-3 times a month.</p>	<p>Students are engaged in interdisciplinary instruction 1-3 times a week.</p>	<p>Students are engaged in daily interdisciplinary instruction that supports Georgia Standards of Excellence mastery.</p>
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Required

- Students can clearly articulate an understanding of the math and science concepts being studied and provide evidence of learning through use of their STEM journals.
- Teachers review district pacing guides to determine connection between disciplines and standards.

<p>15. Work-Based Learning (WBL) or Capstone Project</p>	<p>No students are involved in work-based learning opportunities. No students are required to complete a capstone project.</p>		<p>100% of STEM students are enrolled in work-based learning or required to complete a capstone project.</p>
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Required

- Submission of at least two examples of student work as a result of work-based learning or two examples of a capstone project

Example Artifacts

- Work-based learning opportunities in a STEM field
- Portfolio can be used to document work-based learning or a capstone project

<p>16. Technology Integration</p>	<p>There is little or no technology integration in the classroom.</p>	<p>A technology plan is in place to integrate a variety of technology tools supporting mastery of Georgia Standards of Excellence.</p>	<p>A school-wide technology plan is implemented. Classrooms include a variety of technology tools that are integrated at least weekly that support mastery of Georgia Standards of Excellence.</p>	<p>Technology use is ubiquitous throughout STEM classrooms and students are producers and not just consumers of digital content that support mastery of Georgia Standards of Excellence.</p>
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Required

- Submission of at least two student-produced products using technology.

Example Artifacts

- Students are regular producers of websites, blogs, computer programs, videos, classroom digital products, apps etc.

- Instructional technology equipment is rarely inoperable
- Teachers and students receive on-going access and opportunity to expand their proficiency in technology use

17. Investigative Research	There is no investigative research occurring in classes.	STEM students are conducting investigative research, but it is not connected to the grade-level appropriate Georgia Standards of Excellence.	STEM students conduct investigative research to make claims, collect evidence, analyze data, and argue from evidence that connect to the grade-level appropriate Georgia Standards of Excellence.
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Required

- Students can communicate results via written, oral, and digital presentations.
- Submission of at least two student investigative research topics and their findings.

Example Artifacts

- Documentation of student analysis and data interpretation, explanations and design solutions, and engagement in argument from evidence
- Documentation of student use of Claim-Evidence-Reasoning model.
- Documentation of how investigative research is used to improve student solutions in both day-to-day instruction and long-term project.
- Students present findings to a public audience that includes business and community partners
- Student research is posted in hallways and classroom walls

18. STEM Journals	Students do not use written journals to document	STEM journals are being used in some, but not all grade levels or are not used consistently	Students document long-term projects-based learning, day - to-day interdisciplinary learning, and investigative research in STEM journals.
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Required

- Students utilize school-identified problem-solving process (i.e. Engineering Design Process, Design Thinking, or school-created version) or Claim, Evidence, Reasoning framework. This is guided by teacher to ensure standards mastery.
- Submission of at least two examples of student journal use
- Documentation of how teachers plan for student journal usage during weekly collaboration

19. Accountability / Sustainability	There is no evidence or plan in place to sustain the STEM culture.	→	Schools determine the evidence that students are increasing in academic growth. There is a plan in place to sustain the STEM culture.
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Required

- Schools indicate evidence the STEM curriculum is increasing student academic growth over a three-year period through The Georgia Milestone Assessment, CCRPI.
- Schools submit a plan to indicate how they will continue to grow and sustain STEM culture.