Georgia STEAM Certification Continuum for High School

The high school certification requires that students be in an internship program prior to certification

Criteria	Pre-Implementation → Continuum → Full Implementation			
1. STEAM Vision and Culture	No vision is in place and there is no STEAM culture evident in the school.			The vision for STEAM is clearly defined and a STEAM culture has been established within the program and/or school (students articulate through their actions a passion and perception that STEAM is the school culture).
Required: ***Note - * The terms "Fine Arts" and "Arts" throughout all STEAM certification documents is defined as Dance, Music, Theatre and Visual Arts*** 1. The STEM vision for the school/program is written. 2. The school provides evidence that a STEM culture has been established (it is the school's decision how they will show this).				
2. STEAM students (Not applicable for whole school certification)	No students are identified as STEAM.	STEAM students are identified.	STEAM students are identified and a selection process is described.	A school designed selection process that has been vetted with successful longitudinal evidence identifies STEAM students.
Required: 1. A description of how students are selected based upon specific criteria such as academic achievement, interest, standardized test scores, lottery, random selection, etc. 2. A four-year plan of course options for STEAM students are in a written document 3. A copy of the STAEM application for the STEAM program/school.				
3. Non-traditional student participation in STEAM (minorities, females, and economically disadvantaged)	The non-traditional student participation does not reflect the	A plan is being developed for outreach, support, and focus on non-traditional student	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, minorities, and economically disadvantaged.

(Not applicable for whole school certification)	diversity of the school.	populations.		
Required: 1. Documentation of non-traditional student participation (The term Nontraditional Careers refers to jobs that have been traditionally filled by one gender. The US Department of Labor defines Nontraditional Occupations as occupations for which individuals from one gender comprise less than 25% of the individuals employed in each such occupation. For certification purposes, the definition is expanded to include minorities and economically disadvantaged).				
4. Characteristics of the STEAM curriculum	Students in the STEAM program follow a similar curriculum as students not in the STEAM program.	A plan is being developed for an explicit and unique curriculum for STEAM students or a specific curriculum for STEAM students is currently implemented only at some of the school's grade levels.	There is a plan in place to expand an explicit and unique curriculum from grade level to multiple grade levels and to maintain sustainability.	STEAM students are exposed to a unique and explicit curriculum that is different from non-STEAM students and there is evidence of its sustainability (four plus years). The STEAM curriculum should support one or more of the GaDOE STEAM focus areas: advanced academics, agriculture, architecture, biotechnology, computer science, cyber security, energy, engineering, food science and nutrition, forensic science, and/or, health care science **plus arts integration.**
Required: 1.Written description of the unique characteristics of the STEAM curriculum. 2. The school's STEAM focus area is described.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • The curriculum offers opportunities for student presentations of investigations and findings through an art form • There is evidence that students engage in regular "arguments from evidence" during classroom instruction • There are opportunities for students to interact with STEAM professionals to support curriculum • There are opportunities that involve older students working with elementary students in the STEAM program • There are opportunities for students to interact with business/community/arts/museum/university partners to support curriculum • A school foundation composed of parents, community, and business partners has been established to maintain sustainability • An entrepreneur component of the STEAM program may be in place.				
5. Teacher Content Knowledge	None of the STEM			Fine Arts Teachers are all content matter

	teachers are working toward increasing content knowledge in science and math. Fine Arts teachers are uncertified in their subject area.			experts holding certification in their subject area. STEM teachers are *working toward* increasing content knowledge in science and math through multiple means such as: • content collaboration with business/industry or post-secondary partners or informal education partners. • STEM Endorsement (available from the GA PSC school year 2018-19) • additional coursework in math and/or science at the post-secondary level • content collaboration with business/industry, post-secondary partners. • externships
Required: 1. Documentation of method/procedures implemented for increasing math and science content knowledge for all STEAM teachers. 2. Documentation of method/procedures implemented for increasing fine arts teachers content knowledge and arts integration content knowledge of STEAM teachers. 3. Documentation of the plan for sustaining content knowledge and induction of new STEAM teachers.				
6. Teacher Professional Learning	There is no STEAM related professional development currently being planned or that has been offered in the last year. Arts integration training	STEAM teachers attended at least one STEAM professional learning event. Arts integration training for general classroom teachers has occurred at least once	STEAM teachers have on-going STEAM-specific professional learning specific to their STEM or Arts focus) and there is evidence of its implementation in classroom instruction. Fine arts teachers have been provided with	STEAM teachers have on-going STEAM professional learning and STEAM specific strategies relating to the school's identified STEAM focus area and there is evidence of its implementation in classroom instruction. Arts integration training is ongoing throughout the school year.

	has not been provided for general education classroom teachers.		specific content training for their subject area	
Required: 1. Documentation of STEAM specific professional learning for all STEAM teachers that incorporates the following: • Project/problem/place-based learning • Arts integrated instruction • Investigative research-based practices • Collaborative planning practices • Improve STEM-focused content knowledge (advanced academics, agriculture, architecture, biotechnology, computer science, cybersecurity, energy, engineering, food science and nutrition, forensic science, and/or health care science). • Increase of the fine arts focused content knowledge (dance, music, theatre and visual arts) 2. Documentation of visits to other STEM Certified Schools and STEAM focused schools (what school staff visited and location)**.**				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • STEAM teachers have tailored professional learning to their specific needs and/or to their STEM or fine arts focus area • STEAM teachers participate in a job-embedded or practice-based approach to professional learning • STEAM teachers attend STEM, STEAM, and/or fine arts content area state, regional, and national conferences • STEAM teachers present at STEM, STEAM, and/or fine arts content area state, regional, and national conferences • STEAM teachers/administrators have visited other STEM/STEAM Certified Schools and STEAM/ fine arts focused schools • STEAM teachers observe other STEM/STEAM, and fine arts teachers (peer observations, instructional rounds, etc.) • STEAM teachers participate in project/problem-based learning professional learning • STEAM teachers participate in professional learning related to STEAM integration • STEM teachers participate in professional learning to strengthen STEAM and fine arts content knowledge and skills • STEAM teachers participate in arts integration training				
7. Teacher Collaboration	There is no collaboration or collaboration is not structured or	Teachers collaborate quarterly to plan integrated lessons, share/co-create STEAM	Teachers have a set time they collaborate at least monthly together to plan integrated lessons, share/co-create	Teachers collaborate at least bi-monthly to plan integrated lessons, share/co-create STEAM activities, and plan learning outcomes.

	planned.	activities, and plan learning outcomes.	STEAM activities, and plan learning outcomes.	
Required: 1. Documented evidence of weekly STEAM collaborative planning time (minutes, generated artifacts, agendas, etc.).				
8. STEAM Pathways	Students are not pathway completers.	Some STEAM students complete a pathway	~75% of STEAM students complete a STEM CTAE* (agriculture, architecture, biotechnology, computer programming, cyber security, energy, engineering, food science and nutrition, forensic science, health care science, and/or information technology) or science and mathematics advanced academics pathway (AP math and science courses) or fine arts pathway	100% of STEAM students complete a STEM CTAE* (agriculture, architecture, biotechnology, computer science, cyber security, energy, engineering, food science and nutrition, forensic science, and/or health care science) or science and mathematics advanced academics pathway (AP math and science courses) or fine arts pathway.
Required: 1. Documentation of the number of students completing and working on a specific STEAM pathway. 2. School must document work with your district CTAE and/or Fine Arts Director.				
9. Math, Science, and Fine Arts Instruction	Students do not take high-level math and science coursework. Students do not taking daily fine arts instruction.	<50% of the STEAM students are enrolled in AP/IB/Dual Enrollment math, science, and fine arts courses	~75% the STEAM students are enrolled in AP/IB/Dual Enrollment math, science, and fine arts courses. Additional supports are instituted to assist students in meeting these expectations.	All STEAM students are enrolled in AP/IB/Dual Enrollment math, science, and fine arts courses. The school provides additional supports to assist students in meeting these expectations.
Required: 1. Documentation of the number of students enrolled and passing AP/IB/Dual Enrollment math and science classes.				
10. Business, Community, and Post-	There are no	Plans are being	Business, community, arts, and	Multiple business, community, arts, and

Secondary Partnerships **STEM Georgia Business/Community/Post-Secondary Partnership Involvement Levels** ***Link to the GA Teaching Artists Roster:*** **http://gaarts.org/georgia-artists/artists-rosters**	business, community, arts, and post-secondary partnerships.	developed to provide student opportunities to meet STEAM partners and to participate in STEAM learning environments directly connected to in-class learning.	post-secondary partnerships are involved in the STEM instructional program 1-4 times/school year and are directly connected to in-class learning.	post-secondary partnerships are on-going and are involved by directly connecting to in-class instruction, project/problem-based learning, and exposing students to STEAM careers.
Required: Documentation on the quality of the partnership engagement based upon the STEM Georgia Partnership Involvement Levels. ***There must be involvement at all three levels.***				
11. STEM, STEAM, Fine Arts and Exhibits Competitions AND/OR STEM, STEAM, Fine Arts Clubs	No STEAM students are involved in STEM/STEAM, and/or arts competitions, on-site/online STEM, STEAM, or arts exhibits, and/or in state and national STEM, STEAM, and Fine Arts forums.	Some of the STEAM students participate in STEM and/or fine arts competitions on-site/online STEM, STEAM, or arts exhibits and performances, and/or in state and national STEAM forums.	A majority of the STEAM students participate in STEM and arts competitions on-site/online STEM and arts exhibits and performances, and/or in state and national STEAM forums.	All STEAM students participate in STEM and fine arts competitions, exhibits, forums and performances at the school, district, state and/or national.
Required: 1. Documentation that shows how many students have participated in each STEM, STEAM, Fine Arts competition or exhibit (this should equal the number of students in the STEAM school/program).				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS •Included but not limited to the examples listed below: Examples:				

STEM Talk, Science Olympiad, Science and Engineering Fair, eCybermission, TAG IT Challenges, Dupont Essay Contest, BioGENEius Challenges, Clean Tech Challenges, Vex and Lego Robotics, Math Competitions, Technology Fairs, CTAE CTSO Competitions, etc.				
12. Project/Problem-Based Learning and the use of the arts as a presentation tool	Students are only assessed using state and unit assessments.	In addition to state and unit assessments, teachers use multiple indicators of success in a STEAM content area, including knowledge and performance-based assessments.	In addition to state, unit, knowledge, and performance-based assessments, short and long-term projects/problems are implemented and are moving toward student-generated ideas. Students are able to present content learned through an arts form several times each semester.	Short and long-term projects/problems are implemented throughout the school year incorporating student-generated ideas that are standards-based, multidisciplinary and real-world. ***Students are able to articulate the relationship among the concepts they learned in math, science, and the fine arts to their created projects.*** Students are able to present content learned through an art form as regular practice.
Required: Summary of grade level specific, interdisciplinary, STEAM-focused, problem/project-based learning opportunities that have occurred throughout the school year (curriculum map, timeline, calendar, etc.).				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Collaborative projects that require planning, research, discussion/debate, and presentations through an arts form • Products that require students to analyze and interpret data, construct explanations and design solutions, and engage in argument from evidence • Experimentation that requires students illustrate their understanding of STEAM concepts • Peer/Self-assessment on products using rubrics • Solving problems using real-world applications • Student demonstrations that reflect mastery of STEAM content and procedures • Creation of video, artwork, or performance that demonstrates content mastery • Student work may be designed around the Grand Challenges • Portfolios that allow students to portray their learning via collections of personal work • A culminating project that integrates all the STEAM content areas and presents information learned through an art form • Student work created in collaboration with a business/community/arts/post-secondary partner				
13. STEAM Integration	STEAM is not integrated into the curriculum.	STEAM students receive integrated math, science,	STEAM students participate in integrated	Students receive daily math, science, and fine arts instruction that supports a STEAM

	Students receive daily math and science instruction in isolation. Fine Arts classes are sporadic and not integrated into STEM courses.	and fine arts instruction 1-3 times/week.	math, science, and fine arts instruction. Arts Integration is occasionally integrated into other content areas. Standards may be revisited from previous years.	project correlated to current math, science, and fine arts standards. Instruction is multidisciplinary including mathematics, technology, arts and the science and engineering practices: {1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information} Students are able to clearly articulate an understanding of the math, science, and fine arts concepts being studied.
Required: 1. Documentation of the school or classroom schedule indicating time spent on interdisciplinary learning.				
14. STEAM Labs/Resources	There are no STEAM lab/resources in the school. STEAM lab has replaced fine arts spaces.	The STEAM lab has only technology access and a few resources.	The STEAM lab(s) has technology access and resources but are only used by a few teachers. STEAM lab is separate from fine arts spaces.	The STEAM lab(s) has technology access and resources are used by multiple teachers for collaboration, project work, virtual collaboration, and can be used as exhibition and performance space.

Required: 1. Documentation describing the STEAM lab(s), including who uses the lab, how often, and for what purposes?				
15. Student Rigor & Relevance and Instructional Quality	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.	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.	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.	Learning occurs at the adaptation level on a regular basis. ***Classroom instruction is predominantly student centered*** and students have the competence to think in complex ways and also apply the knowledge and skills they have acquired. When confronted with perplexing unknowns, students are able to create solutions and take action that further develops their skills and knowledge.
Required: 1. Submission of at least two examples of student work that has occurred at the adaptation level of the Rigor and Relevance Framework				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Students are asked to use extensive knowledge and skills to take action on perplexing problems with unknown solutions • Student work is designed around a STEAM community or business/arts/industry problem • Project products are exhibited that indicate quadrant D critical thinking skills are being used • Involvement with a specialized science, math, fine arts, and/or engineering program(s) • A culture of inquiry, creativity, and innovation exists among students, teachers, and administrators				
16. Student Internships and/ or Capstone Project	No students are involved in internships or are required to complete a capstone project.	1-49% of STEAM students complete an internship or capstone project.	50-75% of STEAM students complete an internship or capstone project.	100% of STEM students complete an internship and/or capstone project.
Required: 1. Submission of at least two examples of student work as a result of an internship and two examples of a capstone project.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Students are asked to use extensive knowledge and skills to take action on perplexing problems with unknown solutions				

• Student work is designed around a STEAM community or business/arts/industry problem • Students work with university/arts/business partners on real world projects/research • Project products are exhibited that indicate quadrant D critical thinking skills are being used • Involvement with a specialized science, math, fine arts, and/or engineering program(s)				
17. Technology Integration	There is little or no technology integration supporting STEAM teaching and learning.	A technology plan is in place to integrate a variety of technology tools supporting STEAM teaching and learning.	A technology plan is implemented in STEAM classrooms. Classrooms include a variety of technology tools that are integrated at least weekly into STEM teaching and learning.	Technology use is ubiquitous throughout STEAM classrooms and students are producers and not just consumers of digital content. Technology is used to collect and analyze data.
Required: 1. Submission of at least two student-produced products through the use of technology. 2. Evidence of ubiquitous use of technology throughout classrooms.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Computer use is commonplace • Students are regular producers of websites, blogs, computer programs, videos, classroom digital products, music recordings, etc. • Computer-based, online, mobile, virtual, and other technology tools are integrated into STEAM classwork • Probes are used to collect and analyze data • Tablets are in use with apps specific to the topic • STEAM industry related technology is available for student use • 21st century technology tool products by students are visible throughout the school • Instructional technology equipment is rarely inoperable • Teachers and students receive on-going access and opportunity to expand their proficiency in technology use				
18. Investigative Research	There is no investigative research occurring in classes.	Students are conducting investigative research that is grade-level appropriate but the	STEAM students are conducting investigative research that is grade level appropriate, variables have	STEAM students conduct investigative research where they make claims, collect evidence, analyze data, and argue from evidence. Students communicate results via

		purpose is ill-defined and variables have not been identified.	been identified, and the scientific process is understood.	written, oral, and digital presentations and enter their research in a science, math and/or engineering competition. Students have evidence of ongoing research and data collection documented in their STEAM journals or digital portfolios.
Required: 1. Submission of at least two student investigative research topics and their findings. 2. Documentation of the number of students participating in a science and/or engineering fair and their results. 3. Students have documentation of investigative research in their STEAM journals or digital portfolios.				
EXAMPLE ARTIFACTS THAT SUPPORT STEAM EFFORTS • Students enter a science and engineering fair • Students present findings to a public audience • Students publish research through an arts form in a public venue • Student research is posted in hallways and classroom walls • Student performances and exhibitions are ongoing throughout the school year and integrated into project/ problem based learning				
19. Accountability	There is no evidence the STEAM program is increasing student academic growth.			Schools determine the evidence that STEAM students are increasing in academic growth.
Required: 1. Schools indicate evidence the STEAM program is increasing student academic growth over a three-year period through a standardized measure selected by the school.				

***Georgia Department of Education CTAE STEM Pathways: agriculture, architecture, biotechnology, computer science, cybersecurity, energy, engineering, food science and nutrition, forensic science, and health care science. Fine Arts Pathways: Dance, Music, Theatre, and Visual Art.**