Paul Duke STEM High School – STEM/STEAM Pathways

The table below shows the 10 Career and Technical Education Pathways offered in our three STEM Programs. In addition to the pathway information, the table demonstrates the industry certifications and post-graduation college and career opportunities for students upon completion of a pathway.

PDS Program	Pathway	Course 1	Course 2	Course 3	Certification and Credentials Available	Immediate Job Opportunities with Certification	Post-Secondary Education Opportunities	Future Career Opportunities
Engineering & Robotics	**Engineering and Technology**	Foundations of Engineering and Technology	Engineering Concepts	Engineering Applications	AutoDesk AutoCAD/Inventor Certified User	Engineering Technician and Drafting Assistant	Architecture, Engineering, Bio-Medical	AutoCAD Technician, Architecture, Engineering
	Mechatronics	Introduction to Mechatronics	AC Theory, Electric Motors, and Hydraulic Systems	Semiconductors, Mechanical Systems, Pump and Piping Systems	Manufacturing - Precision Mechatronics - NOCTI-Level 1	Electrical Technician, Engineering Apprentice, Computer-Controlled Machine Tool Operator, & Electro-Mechanical Apprentice	4 Year - Engineering (Civil, Mechanical, Electrical, & Industrial) 2 Year – Automated Manufacturing and Engineering Technology	Mechatronics Engineer, Electrical Engineer, and Industrial Engineer
Communication, Art, & Design	**Graphic Design**	Intro to Graphics and Design	Graphic Design and Production	Advanced Graphic Design	Adobe Illustrator Adobe InDesign Adobe Photoshop	Graphic Designer	Graphic Design, Creative Media, and Visual Arts	Multimedia Artists & Animators, Commercial & Industry Designers
	Audio, Visual, Television, & Film (AVTF)	AVTF 1	AVTF 2	AVTF 3	Adobe Premiere Pro Adobe AfterEffects	Video Production /Content Creation, Sound and Video Technicians, Video Editors	Many Opportunities -Assoc Degree (GA Film Academy) - Bachelor/Masters in Film /Journalism/New Media	Directors/Producers/ Content Creators (social media)/Journalists
	Marketing and Management	Marketing Principles	Marketing and Entrepreneurship <u>OR</u> Promotion & Digital Marketing	Marketing Management	Gold Certification from DECA	Retail experience, Direct sales	Marketing, Business, Advertising	Business Ownership, Marketing specialist, advertiser
Digital & Innovative Technology	**Computer Science**	Introduction to Software Technology *in* year 1 **AND** AP Computer Science Principles in 2nd year -OR- AP Computer Science Principles with embedded Introduction to Software Technology (2 credits & grades in 1 period)		AP Computer Science A	Microsoft Technology Associate Software Development Fundamentals	Entry-level Java Developer, Customer Support, App Development	Computer Science Computational Media	Software Developer, IT Analyst, System Engineer, Network Architect
	Cybersecurity	Introduction to Hardware Technology	Introduction to Cybersecurity	AP Cybersecurity	Security+ Fortinet Certification	Security Analyst	IT, Computer Science, Cybersecurity	Security Expert
	Game Design	Introduction to Software Technology in year 1 **AND** AP Computer Science Principles in 2nd year -OR- AP Computer Science Principles with embedded Introduction to Software Technology (2 credits & grades in 1 period)		Game Design	Unity Software Developer	Game Developer	Computer Science, Animation, Game Design	Game Developer, Software Developer, Animation
	Web Development	Introduction to Software Technology in year 1 **AND** AP Computer Science Principles in 2nd year -OR- AP Computer Science Principles with embedded Introduction to Software Technology (2 credits & grades in 1 period)		Web Development	CIW Site Development Associate	Entry-level Web Developer, Customer Support	Computer Science	Web Developer, Cloud Computing, Software Development
	Artificial Intelligence (AI)	Foundations of Artificial Intelligence	Artificial Intelligence Concepts	Artificial Intelligence Applications	AI Entry Certification	Software Programmer, Data Analyst	Computer Science, Data Analytics, & Manufacturing	Careers in machine learning, data analysis, and intelligent system design

- All students at PDS should work to complete at least one pathway. As students complete their pathway of choice, students should also take Fine Arts Courses and World Language Courses. Paul Duke STEM offers 7 classes per semester, so students may take STEM Pathway core coursework and two other electives each semester.
- Advanced courses and program of study (AP, dual enrollment, etc.) are offered as well for students interested in 4-year colleges and seeking advanced degrees.

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Paul Duke STEM High School - Academic Pathways

The table below displays example academic pathways for each content area. A student can be on the standard pathway in one subject and on a more advanced pathway in another subject. While there is room for flexibility and deviation, the table serves as a guide for the most common sequences students complete during their time at Paul Duke STEM High School. Please contact your student's counselor if you have specific questions.

Subject/Content Area	Academic Pathway	9th Grade	10th Grade	11th Grade	12th Grade
Language Arts (4 years of courses required for graduation)	Standard Pathway	Literature & Composition I Paired with Biology	Literature & Composition II	World Literature & Comp/Media	Multicultural Literature OR Dual Enrollment
	Advanced/AP Pathway	Literature & Composition I Paired with Biology	AP Seminar	AP Language & Composition	AP Literature & Composition OR Dual Enrollment
Math (4 years of courses required for graduation)	Standard Pathway (Students who took 8th Grade Math)	Algebra: Concepts & Connections	Geometry: Concepts & Connections	Advanced Algebra OR Enhanced Advanced Algebra & AP PreCalculus	PreCalculus OR Advanced Financial Algebra OR Stat Reasoning OR AP Statistics OR Dual Enrollment
	Advanced/AP Pathway (Students who took Enhanced Algebra: C&C in 8th Grade.)	Geometry: Concepts & Connections	Adv. Algebra: Concepts and Connections	PreCalculus OR AP PreCalculus OR Enhanced Advanced Algebra & AP PreCalculus	AP Calculus AB OR AP Calculus BC OR Dual Enrollment
		Accelerated Geometry: Concepts & Connections	Enhanced Adv. Algebra and AP Precalculus: Concepts and Connections	AP Calculus AB OR AP Calculus BC	Georgia Tech Calculus OR Multivariable Calculus OR Dual Enrollment
Science (4 years of courses required for graduation)	Standard	Biology Paired with Literature & Composition I	Chemistry	Physics	4th Year Science Elective OR AP Science OR Dual Enrollment
	Advanced/AP Pathway	Biology Paired with Lit. & Composition I AND Chemistry (2 Science classes taking 2 periods)	AP Biology OR AP Chemistry	AP Physics 1	AP Physics C OR AP Science OR Elective Science OR Dual Enrollment
Career & Technical Education (4 years of courses recommended for graduation)	Paul Duke STEM offers 10 Career and Technical Education Pathways within our 3 STEM Programs. Please see the reverse side for details	Intro to Software Technology **OR** Intro to Hardware **OR** AP Computer Science Principles with embedded Introduction to Software Technology ***One of these options is REQUIRED for Paul Duke STEM 9th-grade students.***	Students complete a 3-course pathway from the 10 Career and Technical Education Pathways offered in our three STEM Programs, which is on the back page of this document. Our goal is for all students to complete a 3-course pathway, pass an End of Pathway Assessment, and complete a Senior Internship, which demonstrates a unique STEM experience that complements their academic pathways.		**SENIOR EXPERIENCE & EXHIBITION (SEE)** Senior Internship OR Work-Based Learning OR AP Research All graduates are expected to complete a Senior Experience and Exhibition (SEE) as a component of their CTE Pathway.
Social Studies (3 years of courses required for graduation)	Standard	None Required	World History	US History	Economics AND American Government & Civics
	Advanced/AP Pathway	AP Human Geography or None	AP World History	AP US History	AP Macroeconomics AND AP American Government & Civics
World Language Students planning for college should take two - four years in high school	Paul Duke STEM offers Spanish and French on-campus and other options online.	Paul Duke STEM offers 5 years of French, Spanish, and Spanish for Native Speakers on-campus. Students should take 3-4 years between middle and high school if applying to 4-year university. It is highly recommended that students complete their World Language experience in consecutive years, including the transition from Middle School into High School. Graduating seniors can achieve the Seal of Biliteracy, which recognizes a high level of proficiency in speaking, reading, and writing in one or more languages in addition to English.			
Physical Education	1 year of Health and Physical Education is required.	** Health and Personal Fitness	Optional Electives including Weight Training, Body Sculpting, and Team Sports.		
Fine Arts (Students should consider multiple years of Fine Arts)	Paul Duke STEM offers Visual Arts, Band, Orchestra, Music Tech, Dance, and Theater.	Fine Arts elective choices include courses in Band, Orchestra, Music Technology, Dance, Theater, and Visual Arts. Students are encouraged to take 3-4 years of Fine Arts to complete the Fine Arts Pathway. In Georgia, high school students can achieve a Fine Arts Diploma Seal while completing a pathway in dance, music, theater/film, and/or visual art. The diploma seal is a signal that a student is prepared to participate in our current creative economy.			

- ** All students must complete Health & Personal Fitness before starting their Junior year. These courses are required for graduation. Counselors can assist with scheduling.
- **Graduation Requirements:** Students must earn 23 credits to graduate. The breakdown for credits that must be earned is as follows: 4 Math credits, 4 Science credits, 4 Language Arts Credits, 3 Social Studies Credits, Health + Personal Fitness, 3 electives within CTE/World Language/or Fine Arts, and 4 additional general electives.
- The table above does not include course-level designations such as College Prep, Honors, or Gifted.