

IDEAVENTIONS ACADEMY

FOR MATHEMATICS AND SCIENCE

2022 - 2023 Profile

12340 Pinecrest Rd., Reston, Virginia, 20191

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CEEB School Number: 470033

Mission

Our mission is to empower intellectually curious students to understand and improve the world.

About

Head of School: Ryan Heitz **School Counselor:** Sheri Hicks

Ideaventions Academy for Mathematics and Science, founded in September 2015, is a college-preparatory school for gifted to profoundly gifted students with a special interest in one or more of the STEM fields. Ideaventions students are intellectually curious and want to engage in significant endeavors that reach beyond the classroom. We believe that a rigorous high-school education can coexist with a balanced and healthy lifestyle, and adolescence is a time to explore and learn about oneself.

We are a community of intellectually-curious, mature, and inspired students and teachers. By immersing students in engaging courses with expert faculty, we challenge students to develop their analytical thinking, creativity and communication skills. Independence, leadership, and a persistent drive for understanding and improving the world are fostered by the school's nurturing and empowering environment. We currently serve 56 students. Thirty-nine are in grades 3rd-8th and 17 are in grades 9th-12th. The founding classes of the school in 2015 were in grades 4th - 7th, and a grade was added each year with the class of 2021 being the first graduating class. The class of 2023 is our third graduating class.

Accreditation

We are fully-accredited through Cognia (formerly AdvancED)/Southern Association of Colleges and Schools Council on Accreditation (SACS-CASI), an approved accrediting association of the Virginia Council for Private Education, as authorized by the Virginia State Board of Education. Our program has also been STEM Certified through Cognia.

Faculty

The school has 12 full-time faculty and six part-time faculty. Eight faculty members hold master's degrees and four hold doctorate degrees.

Graduation Requirements

Students must complete an equivalent of 23 full-year courses, or 23 credits, comprised of the following:

- English 4 credits
- Mathematics 4 credits
- Science 4 credits
- History/Social Studies* 3 credits
- Computer Science or Engineering 1 credit
- STEM Post-AP Class, Research or Internship 1 credit
- Economics & Personal Finance 1 credit
- World Language 2 credits
- Physical Education 2 credits
- Elective 1 credit

Due to the accelerated nature of the coursework, 9th-grade students are limited to five core, academic classes. Students in 10th-12 grades may enroll in more than five academic classes if they have demonstrated the ability to manage the workload. Students are encouraged to enrich their education by auditing courses of interest or taking electives.

* One must be US History or US Government

Students are eligible to earn a Global Seal of Biliteracy™ or a School Seal of Biliteracy. The School Seal of Biliteracy is granted for completing the English sequence with a grade C or above AND:

- AP examination with a score of three or higher; or
- ILR Proficiency rating of 1+ or higher; or
- ACTFL Proficiency rating of Int-Mid or higher

School Calendar

The school operates a two semester system. A semester is 18 weeks with two nine-week reporting periods. The school day is divided into four 1-hour, 25-minute periods. The high-school schedule is designed to academically, socially and emotionally prepare students for challenging colleges and universities.

Class Ranking and Grading

Ideaventions Academy does not rank students. GPAs are calculated on a 4.0 scale for all credit-bearing academic courses, not including Physical Education.

Score	Quality Points	Letter Grade
93 - 100	4.0	A
90-92	3.7	A-
87-89	3.3	B+
83-86	3.0	B
80-82	2.7	B-
77-79	2.3	C+
73-76	2.0	C
70-72	1.7	C-
67-69	1.3	D+
64-66	1	D
Under 64	0	F

- Honors courses are weighted with an additional 0.5 quality points if the grade for the course is an A - C.
- AP Courses receive an additional 0.5 weight if the grade for the course is an A - C. Students who earn a 3, 4, or 5 on the AP exam receive an additional 0.5 quality point.
- AP-level, Dual Enrollment, and post-AP courses (courses with AP-level prerequisites) receive an additional 1.0 weight.
- Year-long elective courses may be graded and/or receive credit towards graduation. Half-year electives earn no credit and are P/F.
- A select number of courses may be taken during a compressed summer period. Courses taken during the summer are recorded in the transcript in the school-year following the summer taken.
- Dual Enrollment (DE): Students may earn dual-enrollment credit toward high school graduation by successfully completing coursework at an accredited college or university.

Test Scores

Exam Type	Exam	Ideaventions Mean	Global (2021)
Advanced Placement	AP Chemistry	3.94	2.66
	AP Biology	4.92	2.84
	AP Physics C: Mechanics	5.00	3.38
	AP Physics C: E&M	4.50	3.45
	AP Physics 1	4.25	2.41
	AP Physics 2	5.00	3.06
	AP Calculus AB	4.60	2.77
	AP Calculus BC	4.33	3.62
	AP Computer Science A	4.05	3.12
	AP CS Principles	4.00	2.99
	AP World History	4.60	2.71
	AP US Government	3.67	2.62
	AP Macroeconomics	4.67	2.74
	AP Spanish Language	5.00	3.41
AP Spanish Literature	5.00	2.92	
SAT*	Critical Reading	753	533
	Math	775	528
ACT*	Composite	33.3	20.3

*Scores for the classes of 2021 - 2024

Core Curriculum Courses

- **English:** Honors English Literature Honors English Non-Fiction, Honors English 11, Honors English 12
- **Mathematics:** Honors Geometry, Honors Algebra II*, Honors Precalculus & Trigonometry*, AP Calculus BC, Multivariable Calculus, Calculus C + Multivariable Calculus (2022-23 only), Applied Math: Mathematics for Engineers, Differential Equations, Numerical Methods, Introduction to Proofs
- **Science:** Honors Chemistry, AP Chemistry, Honors Biology, AP Biology, AP Physics I, AP Physics II, AP Physics C: Mechanics, AP Physics C: E&M, Introduction to Geology
- **History:** Honors US History, Intensive US History I & II, AP US History, Honors World History, Intensive World History I & II, AP World History-Modern, Intensive European History I & II, History of Genetics
- **Social Studies & Economics:** AP United States Government, Honors Economics, Personal Finance, Economics & Personal Finance, AP Macroeconomics & History of Economics
- **Computer Science:** AP Computer Science Principles, AP Computer Science A, Artificial Intelligence & Parallel Computing, Machine Learning & Data Science: Autonomous Cognitive Assistant
- **Engineering:** Engineering Design: Sea, Air, & Land, Engineering Design: Mechanical, Civil, & Electrical, Solar-Powered Outdoor Monitoring System with Data Logging
- **World Language:**
 - Spanish: III, IV, Honors I, Honors II, Honors III, Honors IV, AP Language, AP Literature, Adv Spanish Literature & History
 - Mandarin Chinese: Honors I, Honors II, Honors III, Honors IV
- **Physical Education**

*Honors options offered starting with the 2020-2021 school year.

Note: Certain courses are offered on a 2, 3, or 4-year rotating schedule.

Elective Courses

- **English:** Writing the Epic Video Game, Rhetoric & Propaganda, Creative Writing (.5 credit)
- **Mathematics & Computer Science:** Programming in MATLAB (.5 credit), Intro to MATLAB, Game Theory
- **History:** Exploration & Colonial America (.5 credit), History of Cinema, History of Classical Games (.5 credit), **Forgotten History of the 20s-40s** (.5 credit)
- **Social Studies:** Technology & Society, Engineer & German Society
- **Engineering:** Mechanical Engineering: Combat Robotics
- **Management Science:** Organizational Behavior & Leadership, Vision & Innovation (.5 credit)
- **Fine Arts:** Fine & Visual Arts (.5 credit), Photography
- **Performing Arts:** Performing Arts (.5 credit), On-Camera Acting

Access to Coursework

In order to academically challenge our students, our lower-school students study high-school level science and history in middle school (grades 6-8). Based on their performance in these courses, teachers evaluate each student's readiness for college-level work starting in grade 9 and make a recommendation on course placement. All AP coursework is available to students all four years of high school. Students wishing to take AP and college-level courses in 9th and 10th grades must receive approval from the teacher of the course.

Student Achievement (Graduating Class Size)

- **Class of 2021 (2):** 1 National Merit Scholar, 1 AP Scholar with Distinction, 1 AP Scholar, 1 National Hispanic Scholar
- **Class of 2022 (2):** 1 National Merit Finalist, 2 AP Scholars with Distinction, 1 Presidential Scholar Candidate
- **Class of 2023 (4):** 2 National Merit Semifinalists, 1 National Merit Commended Scholar

Advanced Placement and Post-AP Courses

AP, college-level, and Post-AP courses are open to students based on teacher recommendation. Fifteen of the 17 high-school students are taking or have taken AP or AP-level coursework.

Advanced Placement courses offered:

- **Science:** AP Biology, AP Chemistry, AP Physics I, AP Physics II, AP Physics C: Mechanics, AP Physics C: Electricity & Magnetism
- **Math:** AP Calculus AB, AP Calculus BC* (*See 21-22 COVID Note)
- **Computer Science:** AP Computer Science Principles, AP Computer Science A
- **History:** AP World History - Modern, AP US History
- **Social Studies & Economics:** AP United States Government and Politics, AP Macroeconomics
- **World Languages:** AP Spanish Language and Culture, AP Spanish Literature

College (AP)-Level courses:

- **History:** Intensive US History I & II, Intensive World History I & II, Intensive European History I & II - These are writing-intensive courses where students write multiple history research papers
- **Mathematics:** Applied Math: Mathematics for Engineers, Introduction to Proofs

Post-AP courses (AP or college-level course is a prerequisite):

- **Math:** Multivariable Calculus, Differential Equations, Numerical Methods
- **Science:** Introduction to Geology, Neuroscience
- **Computer Science:** Artificial Intelligence & Parallel Computing Research Lab, Machine Learning & Data Science: Autonomous Cognitive Assistant
- **World Languages:** Advanced Spanish Literature & History

One-hundred AP exams have been administered between 2018 and 2022. In 2022, 2020, and 2018 we had a 100% pass rate for all administered exams. In 2021 we had 90% pass rate and in 2019 we had a 91% pass rate.

Three students in our high-school have earned the Global Seal of Bilingualism.

Extracurricular Activities and Clubs

- **Clubs:** Drama Club, Sports Club, Naturalist Club, Business Lab: School Store, Dungeons & Dragons Club, SysAdmin Club, Inventors Club, School Magazine, Rocketry Club, HS Social Committee, Animal Lovers Club
- **Honor Societies:** Math Honor Society, Spanish Honors Society
- **Competition Teams:** America Rocketry Challenge, Vertical Robotics

COVID-19 Impact and Changes

2021 - 2022: Our school operated under in-person instruction for the full year. To support student mental health during the transition year, AP Calculus BC was not offered and all students that would have been enrolled AP Calculus BC were assigned to AP Calculus AB. Those students who took AP Calculus AB in 21-22 are taking Calculus C & Multivariable Calculus in the 22-23 school year, which covers the remaining topics of the Calculus BC curriculum followed by multivariable calculus. This class will only be offered in '22-'23.

2020 - 2021: Our school opened for full-time, in-person instruction in August of 2020. Starting November 20, 2020, our school switched to virtual, synchronous classes. We reopened for in-person learning February 5, 2021.

Spring 2020: We transitioned to a synchronous, live, virtual school on Monday, March 16, 2020 and maintained the normal school schedule. Physical Education was completed with a parent-signed log of physical activities. Tests and exams were proctored by parents in person or by a teacher virtually. Students completed AP exams and the full scope of all curricula and were assigned grades for their work in the 4th Quarter.