

The Math & Science Academy

@ Dulles High School dhsmathandscience.weebly.com

2013-2014 GUIDE TO THE DULLES MATH & SCIENCE ACADEMY

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Believing that each student is unique and capable of learning, it is the mission of Dulles High School to develop the student's academic physical, cultural, spiritual, moral and vocational capabilities; provide opportunities for personal success; instill a respect for property and constituted authority; and create responsible members of a democratic society. In order that this mission be realized, Dulles High School will foster a stimulating environment and opportunities for all students to learn.



"Education is the kindling of a flame, not the filling of a vessel" ~ Socrates

What is the Academy?

Carl Sagan once said that "science is the key to our future as a people." Here at the Math & Science Academy, we emphasize the significance of math and science in a modern society propelled by daily technological innovation. We believe that through the power of math and science, we can devise solutions to the world's innumerable problems, ranging from rapid climate change with environmental science to building the most profitable business with calculus.

Accordingly, at the Math and Science Academy we strive to offer each student ample opportunity to nurture his passion whether it be an aspiration to become a neurosurgeon or a nuclear physicist. Each student has the opportunity to advance through a specialized series of courses in order to be as prepared for college as possible or broaden his horizons to be equipped for anything that could come his way. For example, courses such as Scientific Research and Design prepare students for a future in research while more specific courses such as Advanced Biotechnology offer valuable insight into a lucrative branch of science that holds great promise. We are prepared not only for the science oriented, but also for those with an affinity for the "poetry of the logical ideas" as Einstein put it. As higher level math curriculums offered at no more than two schools in the district, Multivariable Calculus and Linear Algebra offer a truly exclusive experience for students that they will undoubtedly appreciate in college.

The implications of Moore's Law dictate that with each passing two years, technology's potential doubles and consequently, its corresponding influence on society exponentially surges. We live in a momentous era of unprecedented global innovation, and at the Math and Science Academy we endeavor to educate the current generation of students so that they will be prepared for a rigorous college education and then go on to wrestle with pressing problems like cancer, excessive carbon emissions and, fossil fuel reliance.

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(7) \psi(x) \rightarrow \psi(x) + \varepsilon \varphi(x) + \{ \land \forall ARIATION \ \varphi(x) \ Is ADDED

(8) \frac{\partial}{\partial \varepsilon} (\Delta x)^2 (\Delta y)^2 = (\Delta y)^2 \frac{\partial}{\partial \varepsilon} (\Delta x)^2 + (\Delta x)^2 \frac{\partial}{\partial \varepsilon} (\Delta y)^2 = O

(9) (\Delta x)^2 \left[ \frac{\ln}{\ln t} \right]^2 (\frac{1}{\Delta x})^4 \frac{\partial}{\partial \varepsilon} (\Delta x)^2 + \frac{\partial}{\partial \varepsilon} (\Delta y)^2 \right] = O \left\{ \sup_{R \in I, L, C \in B} \sup_{R \in I} (1) \right\}

(10) \frac{\partial}{\partial \varepsilon} \left[ -(\frac{h}{\ln t})^2 (\frac{1}{\Delta x})^2 + (\Delta y)^2 \right] = O \left\{ (\Delta x)^2 > 0, \text{ OTHERWISE } (\frac{\Delta y}{\varepsilon})^2 + 2\infty \right\}

(11) \frac{\partial}{\partial \varepsilon} \left[ -(\frac{h}{\ln t})^2 \cdot \psi(\frac{1}{\Delta x})^2 + 2m \int_{C} (\varepsilon - V(x)) \psi^2(x) dx \right] = O \left\{ \sup_{C \in I} \sup_{C \in I} (\varepsilon - V(x)) \psi(x) \right\} \varphi(x) dx = O \left\{ \frac{\partial}{\partial \varepsilon} \mathcal{L} \varepsilon = O(7) \right\}

(12) -(\frac{h}{\ln t})^2 \int_{C} \frac{d\psi(x)}{dx} \cdot \frac{d\varphi(x)}{dx} dx + 2m \int_{C} (\varepsilon - V(x)) \psi(x) \varphi(x) dx = O \left\{ \frac{\partial}{\partial \varepsilon} \mathcal{L} \varepsilon = O(7) \right\}

(13) \int_{C} \left[ \frac{\ln}{2\pi} \right]^2 \frac{d^2(y)(x)}{c^2 x^2} + 2m (\varepsilon - V(x)) \psi(x) \right] \varphi(x) dx = O \left\{ \inf_{C \in I} \int_{C} \int_
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Who is the Academy for?

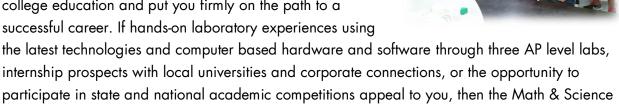
The U.S. Secretary of Education, Arne Duncan, was once asked what he knows works to improve students' performance in science, technology, engineering, and mathematics, and he responded that "great teachers who know the content" are the key to success.

At the Math & Science Academy we offer those with a passion to learn math and science the most highly qualified teachers throughout the district, teachers who will



prepare you for a career in a math or science field and help you realize your innate potential. With over 11 teachers with Masters Degrees, three teachers with Doctorate degrees, and teachers with a wealth of professional experience from former positions held at MD Anderson, Dow Chemical, and Shell Oil as both research scientists and engineers, the Academy at Dulles offers the passionate student an unforgettable experience.

If you feel you are destined to make a difference in the world through math or science, whether it be as a doctor, engineer, or another profession, the teachers at Dulles will help you succeed on every science and math AP offered by the College Board, prepare you for a successful college education and put you firmly on the path to a successful career. If hands-on laboratory experiences using



"I was learning about vectors in my [college] Calculus III class, and while other students were struggling with cross product and dot product, I knew it all from [my high school] class."

Academy is the perfect place for you to spend your four years of high school.

~ DHS 2010 graduate currently attending Carnegie Mellon University

"The bio-related classes aren't too bad right now - we're reviewing a lot of the topics you covered in Bio I and Bio AP. I'm really excited because it's cool to see that the things you've taught us are going to be really helpful."

~ DHS 2010 graduate currently attending Cornell University

Academics at the Academy

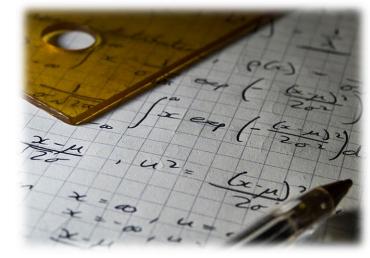
Math Course Offerings

Course	Prerequisites	Grade Points	Credits awarded	Notes
Algebra I	8 th Grade Math	5	1	Recommended prerequisite
Pre-AP Geometry	Algebra I	6	1	Can be taken concurrently Algebra II
Pre-AP Algebra II	Algebra I, Geometry	6	1	Can be taken concurrently with Geometry
Pre-AP Pre-Calculus	Algebra II	6	1	
Calculus AB AP	Pre-Calculus	6	1	Does not allow further math advancement; a.k.a. Calculus
Calculus BC AP	Pre-Calculus	6	1	Includes Calculus I & II
Independent Study: Multivariable Calculus**	Calculus BC AP	6	1	Taught in regular classroom setting; a.k.a. Calculus III
Independent Study: Linear Algebra*	Multivariable Calculus	6	College Credit	Offered through Stanford University; paid course
Statistics AP	Algebra II	6	1	

*Course offered only at the Math & Science Academy

**Course offered at only two schools throughout the district

Note: Students have two options when selecting a Calculus class. They are advised to take a Calculus course in which they will be challenged and yet will perform successfully. Students may not take Calculus AB followed by Calculus BC



Computer Science Course Offerings

Course	Prerequisites	Grade Points	Credits awarded	Notes
Pre-AP/Advanced Computer Science I	None	6	1	
Computer Science AP	Computer Science I	6	1	Can be taken without Computer Science I with an A in Pre-AP Geometry; a.k.a. Computer Science II
Independent Study: Computer Science III	Computer Science II	6	1	Taught in a small-scale classroom setting



Science Course Offerings

Biology Courses



Course	Prerequisites	Grade Points	Credits awarded	Notes
Pre-AP Biology	None	6	1	a.k.a. Biology I
Biology AP	Biology, Chemistry	6	1.5	a.k.a. Biology II
Advanced Biotechnology**	Biology AP, Chemistry AP	6	1	Approval required if prerequisites are not met
Anatomy & Physiology	3 years of science coursework	5	1	
Aquatic Science	3 years of science coursework	5	1	

Chemistry Courses

Course	Prerequisites	Grade Points	Credits awarded	Notes
Pre-AP Chemistry	Algebra I, any other science class	6	1	a.k.a. Chemistry I
Chemistry AP	Algebra II, Biology, Chemistry, Physics	6	1.5	Physics can be taken concurrently; a.k.a. Chemistry II
Chemistry III (Organic Chemistry)**	Chemistry AP	6	1	

 $[\]ensuremath{^{\star\,\star}}\xspace$ Course offered only at the Math & Science Academy

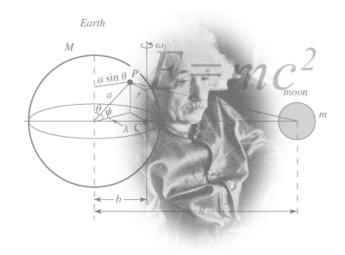
Physics Courses

Course	Prerequisites	Grade Points	Credits awarded	Notes
Pre-AP Physics	Algebra II	6	1	Algebra II can be taken concurrently; a.k.a. Physics
Physics AP-C (Mechanics, Electricity & Magnetism)	Physics, Calculus	6	1.5	Calculus can be taken concurrently; encompasses two AP exams; a.k.a. Physics II
Modern Physics (Molecular Physics)**	Physics AP-C	6	1	a.k.a. Physics III

Additional Courses

Course	Prerequisites	Grade Points	Credits awarded	Notes
Environmental Science AP	Algebra I, 3 years of science coursework	6	1	
Engineering Design and Problem Solving	None	6	1 Science	Offered at the Honors level at the Academy
Scientific Research and Design	Recommendation, 3 years of science coursework	6	1	Can satisfy academy graduation requirements

 $[\]ensuremath{^{*\,*}}\xspace$ Course offered only at the Math & Science Academy



Graduation Requirements

General District Requirements

Recommended High School Program (RHSP)

• E	nglish	4 Credits
• ٨	Mathematics	4 Credits
• S	cience	4 Credits
• S	ocial Studies	4 Credits
V	Vorld Languages	2 Credits
• F	ine Arts	1 Credit
• P	hysical Education	1 Credit
•	lealth	½ Credits
• S	peech	½ Credits
• E	lectives	5 Credits

Meeting State Assessment Performance Requirements

Distinguished Achievement Program (DAP)

- Equivalent to the RHSP courses except for the following differences
 - Three World Language credits required
 - Only 4.5 Elective credits required
- Requires four Advanced Measures, examples of which include
 - Test Data (PSAT scores, AP scores, etc.)
 - College Courses (College campus courses classes that count for both college and high school credit, completing a tech prep program, etc.)
 - Original Research or Project (Science Fair, UIL competition, etc.)

Academy Specific Requirements

- Completion of 11 math and science courses taken at the Pre-AP/Honors or AP level (5 math and 6 science or 6 math and 5 science), extras of which will count as electives.
- Attempting at least four AP exams, including two science, one math, and one in another discipline
- Completion of a corporate/university internship or an Upperclassman Final Project
- Maintaining a semester average of 80 in all Academy coursework
- Maintaining acceptable attendance and discipline history



Our Academic Profile

Academic Excellence

5A UIL Academic 2013 Champions

- Mathematics: 1st Place Team State Champions
- Number Sense: 1st Place Team State Champions
- Science: 1st Place Team State Champions
- Calculator Applications: 2nd Place State Team
- Accounting: 2nd Place State Team

2013 Olympiads:

- Math: 1 International Finalist, 1 National Semifinalist
- Physics: 5 National Semifinalists
- Chemistry: 2 National Qualifiers
- Biology: 5 National Semifinalists





Ranked in the **top 4**% of all American High Schools by *Newsweek* in 2012; Ranked in the **top 5**% of all American High Schools by USNews in 2013; Ranked as one of the **Top Ten Schools** in Math and Science in Houston by *Children at Risk* in 2010

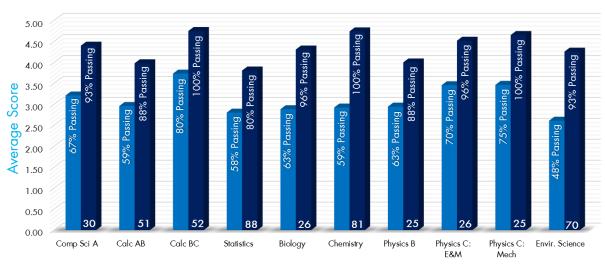
Dulles High School Orchestra: 5 TMEA All-State Students, 19 UIL Solo & Ensemble medalists at state (I & II Rating), Mark of Excellence String Orchestra National Winner, Mark of Excellence Full Orchestra—Commended

2013 Academic Decathlon: 3rd place in region

2013 National Science Bowl: 1st and 2nd in region, Top 12 at Nationals (\$1,000 prize)

2013 Academic World Quest: National Finalist

2013 Dulles Average AP Scores



Fine Arts at Dulles

Orchestra

The Dulles Orchestra is split into four groups of increasing skill level, each of which participates in our four yearly concerts. Everyone has the opportunity to play in the Region orchestra as well as UIL Solo and Ensemble. Throughout the year, we organize several events including an out-of-state trip every four years. Orchestra is a great way to make new friends with others who enjoy music.

Band

Band consists of two seasons. During marching season, the band displays a show on the football field during half time of every game. Concert season consists of 3 concerts. In addition, individual competitions, such as Region and Solo & Ensemble, develop technique and musicianship. Regardless of the season, band is a great way to interact with other students with similar interests.

Choir

Choir helps students develop their voices as well as their music reading skills and sight reading abilities. Throughout the year, the Choir holds many social activities including picnics, movie days, and caroling. The Choir is also involved in competitions such as District, Region, Pre- Area, and Area. Overall, Choir is a great way to make a new family and have fun throughout the year.

Theatre & Drama

Theater Arts highlights the ability of speaking in front of an audience and becoming a character. Two school productions each school year offer anyone a chance to show off his love for singing and dancing. The school musical is a wonderful opportunity to work with different people, whether on stage or backstage. Make sure to join if you aspire to become a Broadway star!

Dance & Dulles Dolls

Join the Dulles Dance program where classes are available for aspiring dancers of all skill levels. The Dulles Dolls Dance Team is for 10th-12th grade students with some dance experience as an audition is required. The Dolls participate in marching season first semester with the band and then dance competitions and the annual Doll Spring Show second semester.

Debate

Debate fosters enhanced speaking techniques, improves social skills, and magnifies critical thinking skills. The class involves a learning of all basic types of debate include Policy and Lincoln-Douglas. Additionally, participation in the after-school club is mandatory and requires attending competitions which last all of Friday and Saturday.

Art

For students who are creative, the Dulles art classes are tailored to shape creativity with technique using a variety of unique projects and media. Painting and AP Design or Drawing Portfolio are a few of the classes offered, as well as opportunities to win scholarships and recognition through state competitions.

Organizations at Dulles

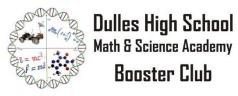
Student Organizations and Clubs

Below are some of the many awesome clubs and honor societies Dulles High School has to offer:

- Computer Science Club
- Chess Club
- Modern Physics Society
- SciNow
- Academic Octathalon/Decatholon
- Ethnic Clubs (Chinese Club, Chinese Honor Society, Muslim Student Association, Spanish Club, Spanish Honor Society, and others)
- Math & Science Club
- Mu Alpha Theta (National Math Honors Society)
- Service Clubs (Red Cross Club, Key Club, TASK Teens Assisting Special Kids, and more)
- UIL Social Studies Club
- Dulles Student Council & Academy Student Council
- National Honor Society
- Tri-M Music Honor Society

Academy Booster Club

The purpose of the Math & Science Academy Booster Club is to enhance, support, encourage, and aid all the activities of the DHS Math & Science Academy (MSA).



"Proud to support young minds"

Their objectives include:

- Encouraging and supporting the academic endeavors of MSA students
- Providing supplementary financial support for various MSA activates
- Supporting the MSA staff in organizing special events and projects
- Aiding the MSA staff in promotion, publicity and program development
- Aiding the MSA internship travel grants for MSA students
- Aiding the MSA internship and educational programs
- Engaging the parents of the MSA students to support various education activities

Their recent activities include buying professional lab equipment for several AP science classes, holding an Annual End of the Year Banquet, and hosting a fun Halloween party!

Learn more at dhsmsabc.org! Anyone is welcome to join!

What is GPA?

GPA (grade point average) is a **weighted average** using the **semester grades** a student receives in all the courses recorded on his/her Academic Achievement Record (high school transcript). GPA is used to calculate Rank in Class (RIC) and is calculated on a 6 point scale in FBISD. GPA is computed as follows to the ten-thousandth:

- Multiply the grade points for each course by the number of hours of credit for the course.
- b. Then compute the sum of the grade points for all courses attempted.
- c. Divide the sum by the total number of credits attempted.

Grade	Grade points				
	H/GT/Pre-AP/				
	Most Ind. Study/AP				
A (90-100)	6.0000	5.0000			
B (80-89)	5.0000	4.0000			
C (75-79)	4.0000	3.0000			
D (70-74)	3.0000	2.0000			
F (0-69)	0.0000	0.0000			

GPA's to be calculated on any scale other than the district scale are the responsibility of the student. Forms for transcripts and calculating GPA are available in the Registrar's Office.

Who gets a GPA/class rank?

- Class rank is calculated for students after the completion of their sophomore and junior years and is available in mid-September of their junior and senior years.
- Final class rank for seniors is established in mid-April and uses the average of the 4th and 5th six weeks grades for the last semester average.

How do I get my GPA/class rank?

Transcripts containing GPA and class rank can be requested from the Registrar's Office before school Class rank information will be posted to Family Access in Skyward.

Sample GPA Calculation

For an example 9^{th} grader,

What is "AP"?

Advanced Placement (AP) is a program created by the College Board offering college-level curriculum and examinations to high school students. Colleges often grant placement and credit to students who obtain high scores on the examinations. The AP curriculum and tests for the various subjects are created for the College Board by a panel of experts and college-level educators in each subject.

Most four-year colleges in the United States and colleges in more than 60 other countries give students credit, advanced placement in courses or both on the basis of AP Exam scores. By entering college with AP credits, you'll save money and may have the time to move into upper level courses, pursue a double-major, or study abroad.

Furthermore, the AP Program offers several AP Scholar Awards to recognize high school students who have demonstrated college-level achievement through AP courses and exams. Although there is no monetary award, in addition to receiving an award certificate, this achievement is acknowledged on any AP score report that is sent to colleges.

"Through AP's college-level courses and exams, you can earn college credit and advanced placement, stand out in the admission process, and learn from some of the most skilled, dedicated, and inspiring teachers in the world."

~ The College Board

APs Offered by the College Board:

Underlined courses are offered at Dulles High School

ART HISTORY

BIOLOGY

CALCULUS AB

CALCULUS BC

CHEMISTRY

CHINESE LANGUAGE AND CULTURE

Comparative Government & Politics

COMPUTER SCIENCE A

ENGLISH LANGUAGE AND COMPOSITION

ENGLISH LITERATURE AND COMPOSITION

ENVIRONMENTAL SCIENCE

European History

FRENCH LANGUAGE AND CULTURE

German Language and Culture

HUMAN GEOGRAPHY

Italian Language and Culture
Japanese Language and Culture

LATIN

MACROECONOMICS

Microeconomics

MUSIC THEORY

PHYSICS B

PHYSICS C: ELECTRICITY & MAGNETISM

PHYSICS C: MECHANICS

PSYCHOLOGY

SPANISH LANGUAGE

SPANISH LITERATURE AND CULTURE

STATISTICS

STUDIO ART

U.S. GOVERNMENT & POLITICS

U.S. HISTORY

WORLD HISTORY

Faculty

Academy Instructors

Dr. Don Winsor: Biology I, Biology AP, Advanced Biotechnology – Ph.D. (Microbiology), former faculty member at the University of Texas Medical School

Dr. Drew Poche: Physics I, Organic Chemistry, Scientific Research and Design, Modern Physics – **Ph.D.** (Organic Chemistry), years in the chemical industry

Ms. Judy Matney: Physics I, Physics C AP (Electricity & Magnetism and Mechanics) – B.S. (Chemistry), M.S. (Math)

Mr. Richard Lewis: Pre-Calculus, Calculus BC AP, Multivariable Calculus – B.S. (Math Education), M.Ed. (Curriculum Development), former instructor at Louisiana State University

Ms. Nancy Malone: Chemistry I, Chemistry AP – B.S. (Materials Science & Engineering), M.Ed. (Teacher Leadership), former engineer for Shell Oil

Ms. Vicki Coffman: Computer Science I, Computer Science II AP, Computer Science III – M.S. (Instructional Technology), served in the Navy as an electronics technician and instructor

Ms. Kristin Lucas: Algebra II – M.S. (Instructional Technology), B.S. (Math Education)

Ms. Caroline Novark: Algebra II, Statistics AP – B.S. (Economics)

Ms. Trinh Nguyen: Calculus AB AP, Pre-Calculus – B.S. (Mathematics), M.Ed. (Mathematics)

Ms. Rachelle Leung: Geometry, Statistics AP – B.S. (Mathematics), B.B.A. (Information Management Systems), M.Ed. (Curriculum Development, Instruction)

Ms. Anissa Herrera: Chemistry I, Environmental Science AP – B.S. (Biology), Chemistry minor, M.Ed. (Teacher Leadership)

Ms. Sarah Cleveland: Geometry - Bachelor in Arts

Ms. Stacey Edwards: Biology I - B.S. (Biology)

Mr. Daniel Sanders: Biology I – B.S. (Biology, Chemistry Education)

Ms. Roberta Prater: Engineering Design & Problem Solving – B.S. (Industrial Arts)

Administrative Staff

FBISD Superintendent

Charles Dupre

Principal

Ronnie Edwards

Math and Science Academy Coordinator

Amber Pearson

Associate Principal

Terra Smith

Assistant Principals

Cholly DeBeau Sarah Laberge James Soders

Counselors

Patricia Crabtree Amy Garrey Jenny Welch

Kaylynn Will

Registrar

Jacqueline Raney

Schedule

At Dulles High School, classes meet for seven 50-minute periods per day. Classes meet five days a week, and 18 weeks per semester.

Transportation

Bus transportation is provided free of charge to all students accepted into the Academy inside the FBISD School Zone.

Contact Information

Amber Pearson

Dulles HS Academy Coordinator

Amber.Pearson @fortbend.k12.tx.us

281-634-5645

Dulles High School 550 Dulles Avenue Sugar Land, Texas 77478 281-634-5600

Calendar

Date Event

December 13, 2013	Academy Application Due at http://academyapp.fortbendisd.com	
January 11, 2014	Math Entrance Exam	
January 17, 2014	Decision letters mailed home	
January 30, 2014	4 Commitment letters must be received from students	
February 10, 2014	Academy Course Selection Night	

Credit Courses outside of school

Correspondence course credit, distance learning course credit, credit by exam, night school, FBISD summer school, evening school, and approved high school credit courses taken in summer are all accepted for credits to varying degrees. However, completing math and science courses during the summer is not approved at the Academy.

Places to find more information

Important information and updates about the Academy can be found at our website: dhsmathandscience.weebly.com. Comprehensive information concerning courses, class rank, graduation requirements, and more can be found online in the FBISD High School Program Guide. More information specifically about Dulles can be found online at dhsvikings.com. Don't forget, middle school and Dulles counselors are a great source of information!



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