

Mathematics & Science Academy at Ocean Lakes High School



J. Michael King, Coordinator

Academy Courses Include

English

Magnet Honors English 9

Magnet Honors English 10

Science

Magnet Chemistry Magnet Geology

*Magnet Molecular Biology

*Magnet Physics

*Magnet Astronomy (s)

*Magnet Analytical Chemistry (s)

*Magnet Biochemistry (s)

*Magnet Human Anatomy and Physiology

*Magnet Meteorology (s)

*Magnet Microbiology (s)

*Magnet Organic Chemistry (s)

Mathematics

Magnet Advanced Algebra Magnet Geometry Magnet Precalculus

*Magnet Mathematical Modeling

*Multivariable Calculus (s)

*Differential Equations (s)

*Magnet Computer Architecture (s)

Technology

Magnet Integrative STEM

The Mathematics & Science Academy provides students who have demonstrated a strong interest and proficiency in mathematics and science an environment where they can extend their knowledge beyond the typical high school curricula. Offering unique courses in math, science, technology, and English, the program gives students the latitude to pursue a broad spectrum of specialty areas while meeting the challenges of rigorous, academic, STEM-related studies.

The Mathematics & Science Academy courses are designed to challenge students with advanced mathematics and science curricula, integrated technologies, technical reading and writing, and extensive problem-solving and research opportunities. Students are able to complete the requirements for the Mathematics & Science Academy and the Advanced Studies diploma by taking at least six courses each year and maintaining at least a 3.0 Grade Point Average.

The Mathematics & Science Academy is driven by a vision of instructional excellence that leads students to pursue STEM careers. In support of that effort, the program adopted the Autonomous Learner Model. This educational framework is designed to help learners work towards the goal of independent or autonomous learning.

Its six aspects are: Orientation, Individual Development, Enrichment, Exploration, Investigation, and Seminars.

Through this lens, MSA students begin in the ninth grade developing the requisite research skills for the production of competitive, significant and publishable products. Students hone these skills each year, participate in an annual symposium, explore STEM topics and careers through mentorships, interviews and research, and eventually complete a formal proposal and capstone project. Students complete a research project or independent study of a real world problem with the end result being a product that offers a solution or that demonstrates scientific inquiry into a research question associated with that problem. A presentation of final product or research is made to an appropriate school or community.

To be eligible to apply, students must complete Algebra I during middle school. Eligible eighth grade students are encouraged to obtain application information from their middle school guidance counselor or the VBCPS website. Completed application packets include a student profile sheet, an Admissions Agreement, parent, teacher, and counselor recommendation forms, student transcripts, most recent report card, and standardized test scores. All applicants participate in an Entrance Examination. Acceptance is competitive with 125 students selected from over 600 annual applicants. Ninth grade applications may be considered provided seats are available and all application procedures have been followed.

Completed applications typically are due in January of the eighth grade year. Students accepted into the program become fulltime Dolphins and are provided transportation by the school division.

Mathematics & Science Academy Student Schedule Framework**

	9th Grade	10th Grade	11th Grade	12th Grade
			Mathematics	
			Honors or AP English 12	
		Mathematics	{AP Physics 2	
Mathematics	Mathematics	Honors or AP English 11 MG Physics or AP Physics 1	AP Physics C or other	
MG Honors English 9 MG Chemistry	MG Honors English 10 MG Molecular Biology		MG Science Electives-1 credit	
{World Hist/Geog I AP Human Geography	{ World Hist/Geog 2 AP European History	{ VA & US History AP US History	{VA & US Government AP US Government	
Foreign Language Health/PE I Elective	AP Human Geography Foreign Language Health/PE 2 Elective (Optional)	MG Integrative STEM Foreign Language Elective (Optional)	Economics & Personal Finance Elective (Required 6th class)	
			* Capstone Project	
Mathematics choice depends on credit earned in middle school and achievement in 9th grade.				
See below recommendation paths.				
Entering With: Algebra I	MG Advanced Algebra MG Advanced Algebra	MG Geometry	MG Precalculus	AP Calculus AB or BC MG Multivariable Calculus (s) MG Differential Equations (s)
Entering With: Geometry	(Two sophomore options to be considered are affected by final 9th grade math performance, teacher recommendation & career plans)	1. MG Precalculus 2. AP Statistics	AP Calculus AB or BC MG Precalculus	Mathematical Modeling AP Statistics Computer Architecture AP Calculus AB or BC

	9th Grade	10th Grade	11th Grade	12th Grade
	AP Statistics			
Entering With: Algebra II / Trig	(Students who received less than an "A" in Alg II/Trig should consider purging it before arriving to high school and taking the MG Adv Alg course.)	MG Precalculus	AP Calculus AB or BC	MG Multivariable Calculus (s) MG Differential Equations (s) Mathematical Modeling Computer Architecture

NOTE: * The Capstone Project is a required component of the MSA program. Although it carries one credit, it does not count towards the 6-class rule; (s) denotes a semester class. The brace { indicates a choice is made. ** Courses and requirements may change as needed to meet state, local, Program and student needs.

Additional Guidelines

- Academy students select the most appropriate course(s) from the highlight-ed selections and must take a minimum of six classes each year. The Capstone Project counts as a credit, but it does not count as one of the six classes.
- Graduation requirements not offered within the Mathematics & Science Academy curriculum will be met from courses available in the established curricula at Ocean Lakes High School.
- Once accepted into the Academy, no mathematics or science summer school credit will satisfy Academy program requirements.
- MSA students must complete Algebra I during middle school years. At least one full credit of mathematics must be taken each high school year which must include one credit of AP Calculus. In addition, a statistics course must be completed by the end of tenth grade. The sequence of mathematics courses each student follows is dependent upon the student's coursework prior to entering Ocean Lakes High School and achievement in Academy mathematics courses.
- The four-year science sequence includes Magnet Chemistry (9th), Magnet Molecular Biology (10th), Magnet Physics or AP Physics 1 (11th), and a full credit of magnet science electives (12th). The magnet science elective should correlate with career interests. If an Academy student desires to take an AP science course in the senior year, the requirement for a full credit of magnet science may be decreased to one-half credit. AP Physics 1 may replace Magnet Physics only if the student agrees to take the AP exam for the course and secures the Academy Coordinator's permission.
- Although three years of a foreign language are required, four years are recommended.
- A cumulative 3.0 GPA must be maintained. Students whose GPA drops below 3.0 will be subject to academic probation. In the event that successful completion of all program requirements becomes impossible, the student will be required to exit from the program. Students who exit the program must return to their zoned high school.
- Students who meet the graduation requirements for the Academy program will have exceeded the state-mandated requirements for the Advanced Studies Diploma. Students will receive both a Mathematics & Science Academy seal and the Governor's seal on their diploma.