



Governor's School for Science, Math and Technology Profile Sheet for Transcripts

Mountain Vista Governor's School is a regional program for academically talented and highly motivated 10th, 11th and 12th grade students from the school divisions of Clarke County, Culpeper County, Fauquier County, Frederick County, Rappahannock County, Warren County and Winchester City. Students are selected to attend MVGS through a rigorous application/screening process. Mountain Vista Governor's School has approximately 70 graduates each year. Of these, 99% attend a college or university.

Mission Statement: The mission of MVGS is to engage students in a technology-enhanced program, exploring connections within an integrated curriculum of advanced mathematics, science, and the humanities through collaborative research. MVGS challenges students to grow as critical thinkers, leaders, and innovators to maximize their future roles in a constantly changing global society.

Vision: MVGS brings together a diverse community of exceptional learners in a safe, supportive, and challenging environment to:

- engage in hands-on learning, scholarly investigation, and authentic problem-solving.
- attain fluency in mathematics, science, and communication.
- explore the human condition.
- connect with a close-knit cohort of peers.
- collaborate with community members.
- develop personal integrity, citizenship, and public service.
- utilize current technology and data analysis.
- exercise critical thinking and foster innovation.
- participate in local and global dialogue.
- create and communicate useful solutions to real world challenges.

Curriculum Overview: The interdisciplinary curriculum design of Mountain Vista Governor's School challenges students to construct a highly integrated understanding of mathematics and designated sciences. The development of technology and research skills supports students in solving authentic problems in a scholarly and professional manner. The humanities component requires students to analyze the relationship between the arts and sciences and construct a personal philosophical basis for ethical leadership in applying scientific knowledge to challenging real-world issues. Students are graded on a ten-point scale. The school is housed at two sites of Laurel Ridge Community College.

Mountain Vista Contact Information

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Mountain Vista Governor's School Course Descriptions

Most courses are available for college credit through Laurel Ridge Community College.

MVGS Collegiate Chemistry 442009 This is an introductory college chemistry course. The curriculum is laboratory based and includes study in matter and measurement, atoms, molecules, ions, ionic and covalent bonding. Second semester includes study in liquids and solids, solutions, chemical kinetics, chemical equilibrium, and acids and bases. Upon successful completion of the course, students may be capable of and suited for the Advanced Placement (AP) Chemistry examination. Dual enrollment option is provided in CHM 111-112.

MVGS Physics 1C: Mechanics 451019 This is a calculus-based, first-year physics course. The primary focus of study will include the topics of Newtonian Mechanics and Thermodynamics. Inquiry-based laboratory investigations include extensive integration of technology. This course is integrated with MVGS Calculus 1. Upon successful completion of the course, students may be capable of and suited for the AP Physics C (Mechanics) examination. Dual enrollment option is provided in PHY 241.

MVGS Physics C2: Electricity and Magnetism 452029 This is a calculus-based, second-year physics course. Inquiry is stressed and laboratory investigations incorporate extensive integration of technology. The primary focus of study will include the topics of Electricity and Magnetism and Modern Physics. This course is integrated with MVGS Calculus 2/3. Upon successful completion of the course, students may be capable of and suited for the AP Physics C (Electricity & Magnetism) examination. Dual enrollment option is provided in PHY 242.

MVGS Biology 1: Collegiate Biology 432019 This is the equivalent of a college introductory biology course for biology majors. The curriculum is laboratory based and includes extensive integration of laboratory technology. Major units of study include Cell Processes, Ecology, Evolution and Genetics and Information Transfer. Upon completion of the course, students may be capable of and suited for the AP Biology examination. Dual enrollment option is provided in BIO 101

MVGS Collegiate Environmental Science 462029 Collegiate Environment Science explores the fundamental components and interactions that make up the natural systems of the earth. It introduces the basic science concepts in the discipline of biological, chemical, and earth sciences that are necessary to understand and address environmental issues. Upon successful completion of this course, students may be capable of and suited for the AP Environmental Science examination. Dual enrollment option is provided in ENV 121.

MVGS Precalculus 316209 Precalculus develops students' understanding of algebraic, trigonometric, exponential, logarithmic and transcendental functions, and parametric and polar equations. Investigating real world data will enhance the understanding of realistic applications through modeling. Graphing calculators and computers and other appropriate technological tools will be used to assist students. This course serves as the prerequisite for MVGS Calculus and MVGS Statistics. Upon successful completion, students may be capable of and suited for the Precalculus AP examination. Dual enrolled option is provided in MTH 167.

MVGS Calculus 1 317519 This is a rigorous course in calculus with analytic geometry. Topics include concepts and applications of differential and integral calculus and an introduction of elementary differential equations. Upon successful completion, students may be capable of and suited for the Calculus AB AP examination. Dual enrollment option is provided in MTH 263.

MVGS Calculus 2/3 317809 This course is a fast-paced calculus course which includes multivariable calculus. Topics include concepts and applications of integral calculus and an introduction of elementary differential equations, methods of integration, sequences and series, power series, Taylor and Maclaurin series, study of polar and parametric functions, three-dimensional analytical geometry, vector analysis, vector functions, multivariate functions, partial derivatives, optimization, double and triple integrals. Upon successful completion, students may be capable of and suited for the Calculus BC AP examination. Dual enrollment option is provided in MTH 264 and MTH 265.

MVGS Statistics 319009 This course is a study of descriptive and analytical statistics. Students will learn and apply four broad conceptual themes which include exploring data, planning a study, anticipating patterns, and statistical inference. Students will use statistics as a tool to predict, investigate, and analyze a variety of statistical and research problems. Upon successful completion, students may be capable of and suited for the Statistics AP examination. Dual enrollment option is provided in MTH 245.

MVGS English 10 114009. This course also introduces and prepares students to/for the critical processes and fundamentals of writing in academic and professional contexts. AP testing option is not provided. Dual enrollment option is provided for ENG 111.

MVGS English 11 with Research 2 115009 This course also introduces and prepares students to/for the critical processes and fundamentals of writing in academic and professional contexts. Dual enrollment option is available for ENG 112. **Research 2** Explores and applies the principles of effective humanities-based research. The components and concepts include strengthening of global views, broadening of intellectual foundations, teaching communication clearly, helping to develop creative and critical thinking skills, enhancing problem solving skills, creating engaged citizens and thinkers, and reinforcing cultural and ethical responsibilities and values to help all students understand the impact that math, science, and technology have on society.

MVGS Government 12: Political Philosophy and US Government 244009 This course introduces students to the key philosophies, institutions, policies, and behaviors, and political systems. Students will learn to apply disciplinary reasoning to assess the causes and consequences of political events, interpret data to develop evidence-based arguments, and defend political positions and solutions while cultivating ethical dispositions and leadership skills which can be applied to contemporary, domestic, and international problems. Students will earn one US Government credit, which will meet the requirements for Virginia & US Government per the VDOE. Upon successful completion of the course, students may be capable of and suited for the AP Exam in United States Government and Politics. Dual enrollment option is provided in PLS 135 and PLS 241.

MVGS Research 1: Introduction to Scientific Research 011519 The students' review of literature, analysis of arguments, and evaluation of experiment designs will enable them to explore basic research components. The students will use statistical and technological tools to organize and integrate information, design studies and experiments, gather data, and plan individual research projects. AP and dual enrollment options are not available.

MVGS Economics 280009 Students develop critical thinking skills through the understanding, application, and analysis of micro and macroeconomic concepts and structures. Students will gain an understanding of economics principles as they apply to free markets and global systems. They will develop familiarity with economics models and graphs, scarcity and choices, supply and demand, elasticity, economic performance measures, national income and price determination, the financial sector, factors that affect income and economic growth, and stabilization policies. Students will gain an understanding of their role in the financial markets. This course can be used to meet the Economics and Personal Finance diploma requirement. Upon successful completion, students may be capable of and suited for the AP Macroeconomics Exam. Dual enrollment option is not provided.

MVGS Computer Science 1 318609 Fall semester introduces problem solving and implementation of solutions using a high-level language, Python, in a structured programming environment. Spring semester focuses on problem solving methods using object-oriented programming with the Java language. Upon successful completion, students may be capable of and suited for the Computer Science A AP examination. Dual enrollment option is provided in CSC 221 and 222.

MVGS Computer Science 2 318629 Fall semester introduces discrete mathematics concepts in relation to computer science. Applies the use of Boolean algebra, analysis of algorithms, such as logic, sets and functions, recursive algorithms, and recurrence relations, combinatorics, graphs, and trees. Programming is in Python. Spring semester explores and contrasts data structures, algorithms for manipulating data structures, and their use and appropriateness in writing efficient real-world programming applications. Investigates implementations of different data structures of efficient searching, sorting, and other transformer operations. Programming is in C++. Assignments in this course requires a basic understanding of programming concepts, problem solving, basic college algebra and trigonometry skills. This course extends beyond the AP level. Dual enrollment option is provided in CSC 208 and 223.