“In the 21st century, scientific and technological innovations have become increasingly important as we face the benefits and challenges of both globalization and a knowledge-based economy. To succeed in this new information-based and highly technological society, students need to develop their capabilities in STEM to levels much beyond what was considered acceptable in the past.”

-National Science Foundation
WHY STEM?

St. Mary's County Public School System has developed a rigorous and unique program of study emphasizing the core areas of mathematics and science with an infusion of technology and engineering. This STEM program is offered to all SMCPS students and housed at two schools: Spring Ridge Middle School, and Great Mills High School. The proximity of these two schools to the Patuxent River Naval Air Station and the Technology Corridor make them ideal sites.

WHY STEM EDUCATION?

- **RIGOR**
  - Extensive laboratory experiences using the most contemporary technologies for scientific inquiry, mathematical calculation, engineering design, and problem-solving techniques
  - Exposure to numerous and diverse technological applications including: computers, simulation software, digital imaging, data acquisition, sensors, diagnostic, and other peripheral devices

- **RELEVANCE**
  - Curricula that integrates analytical reading and technical writing skill development
  - Intensive communication assignments designed to refine verbal and visual communication abilities
  - Participation in nationally recognized academic and engineering competitions

- **UNDERSTANDING**
  - Emphasis on critical and creative thinking in academic coursework
  - Interdisciplinary approach to curriculum, stressing complete understanding of systems

- **APPLICATION**
  - Culminating projects done cooperatively and individually to demonstrate and apply learned concepts
  - Highly focused academic and career counseling to help facilitate transition to higher education and careers in science, technology, engineering, and mathematics
  - An environment of intellectual and technical exchange with local business and industry mentors to promote awareness and interest in diverse careers in science and engineering

OTHER KEY FEATURES OF THE STEM CONSORTIUM

- **INTERNSHIPS**
  Local businesses and industries work to provide paid or non-paid internships for seniors aligned with career pathways in mathematics, science, and engineering. Students link the internships with the particular work addressed by their project or other research conducted in their coursework. Students strive to identify summer internships that offer authentic work experience in a STEM discipline.

- **MENTORSHIPS**
  A key feature of the STEM academy program is the involvement of individuals from local businesses and industries with science, mathematics, or engineering fields. Mentors assist students with coursework, offer academic and technical expertise, and provide direction for specific senior project work. Mentors may provide access to their workplace within their industry or business. Mentors also visit classrooms and present on selected topics to enhance the instructional program.

- **PLEDGES**
  Local business and industry support is essential to the success of this challenging instructional program. A foundation has been formed for those wishing to give direct monetary support to the consortium. In some cases, individuals or business partners may prefer to purchase or donate specific equipment or supplies for the many advanced level courses offered in this initiative. These efforts can be coordinated with the STEM Supervisor.
HOW WILL STUDENTS BE ASSESSED?

The Great Mills High School STEM Academy offers courses in science, technology, engineering, and mathematics, giving students extraordinary knowledge and skills, as well as career exploration in numerous science and engineering pathways. The curriculum includes dedicated research classes founded upon the application of mastered material, integrated contemporary technologies, and extensive problem-solving experience. Advanced Placement courses that include the AP Capstone courses (AP Seminar and AP Research) are incorporated and provide experiences for rigor and college/career readiness.

High School

Students in the STEM Academy are challenged at all levels to demonstrate mastery of concepts by applying them to real-world settings. The STEM Academy at Great Mills High School will have a culminating CAPSTONE project that focuses on an approved problem that integrates mathematics, science, and technology as part of the solution. In high school, students take these skills and apply them to the real world through industry internships and research. Local assessments, State assessments, to include MCAP, Advanced Placement assessments, and ongoing formative assessments are also utilized to create a complete student profile.

WHAT DOES HIGH SCHOOL STEM ACADEMY LOOK LIKE?

STEM CAPSTONE

Students identify a unique problem to study during a comprehensive mentorship with a local STEM professional. Successful completion of this program includes 100 hours of independent work, a multimedia presentation, a written summation, and presentation in a symposium format.
APPLICATION PROCESS AND ACADEMY REQUIREMENTS

Access the online application form from the St. Mary’s County Public Schools’ website: [http://www.smcps.org/academies](http://www.smcps.org/academies)

Each application will be reviewed by an admissions team comprised of educators and administrators. Candidates will be evaluated based on their past academic performance, dedication to learning, and desire to pursue STEM.

**ADMISSION CRITERIA**

- Local Assessment Measures
- Science and Math* Grades
- Applicants whose scores on the above measures meet or exceed the threshold score will be entered into a lottery for open seats.

*Completion of Algebra I is strongly encouraged.

**REQUIRED STEM COURSEWORK**

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<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
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<tr>
<td>STEM PreAP English 9</td>
<td>STEM PreAP English 10</td>
<td>AP English Language</td>
<td>AP English Literature</td>
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<tr>
<td>STEM Algebra 2 (Honors)</td>
<td>STEM Precalculus (Honors)</td>
<td>AP Mathematics Course</td>
<td>AP Mathematics Course</td>
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<tr>
<td>STEM Chemistry</td>
<td>STEM Biology (Honors)</td>
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<td>AP Science or AP Comp Science</td>
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<td>AP Physics (Honors),</td>
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<td>STEM Engineering (Honors)</td>
<td>*STEM Internship (Summer)</td>
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<td>Social Studies</td>
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<td>World Language</td>
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<td>in Middle School)</td>
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Students must also complete other core academic requirements (e.g., PE/Health, and Fine Arts)

Please see the 2023-2024 Program of Studies for all STEM Requirements.

Foundation
A 501(c)3 tax exempt foundation will provide a vehicle for community members and business partners to donate funds to support the goals of the STEM initiative.

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