Components of a STEM Education

Problem Based Learning
Given a scenario, students must come up with a solution using what they can find through research and personal knowledge.

Group Collaboration and Communication
Working in heterogeneous groups, students are exposed to different personalities and ideas, learn compromise and build leadership skills.

Engaged Students
Students are encouraged to explore their interests and use their own methods for problem solving.

Challenging Curriculum
Classes are designed to allow exploration of all STEM fields while pushing students to realize their full academic potential.

Real World Connections
Students work on real world situations, in collaboration with business professionals, to solve locally identified problems and on their own to develop a process or product to address a need.

Program Pathways / Pathway Specific Courses

Project Lead the Way
Aerospace Engineering / Civil Engineering
- Honors Engineering Principles
- Honors Introduction to Engineering
- Honors Digital Electronics
- Honors Aerospace Engineering
  or Honors Civil Engineering/Architecture
- Honors Engineering Design & Development with Internship

Earth & Space Systems
AP Environmental Science or Aeronautics
Advanced Earth Space Missions (NASA Online Course)
Advanced Research & Analysis with Internship

Green Technologies
AP Environmental Science
Advanced Environment in Society
Modern Bio Tech

Computer Science & Theoretical Applied Mathematics
AP Computer Science
Advanced Parallel Cloud Computing
Advanced Mathematical & Scientific Model Ghosting
Advanced Research & Analysis with Internship

Nanotechnology & Materials Science
AP Computer Science
Advanced Materials Science
Advanced Nanotechnology Explorations
Advanced Research & Analysis with Internship

College Matriculation for 2020 Graduates

Anne Arundel Community College  US Naval Academy
Cape Tech Community College  University of Delaware
Cedar Crest College  UMD - Eastern Shore
Cornell University  UMD - Baltimore County
Drexel University  University of Maryland
Emory-Riddle Aeronautics University  University of Massachusetts
Georgia Tech  University of Miami
Georgia Tech  University of Pittsburgh
Liberty University  University of Reading
Loyola University MD  University of South Carolina-Columbia
McDaniel College  University of South Florida
Middlebury College  University of Southern California
Ohio Wesleyan University  University of Tennessee
Pennsylvania State  University of Texas
Queens University of Charlotte  University of Virginia
Rice University  University of Waterloo
Salisbury University  Virginia Tech
St. Mary’s College of Maryland  Virginia Wesleyan University
Texas A&M University  Washington College
Towson University  West Virginia University
Tufts University  US Coast Guard Academy

Top 25 Engineering Source School
University of Maryland Clark School of Engineering

Graduated Class Size: 82 students
Total Scholarships Awarded for STEM Class of 2020: over $10.1 million
In order to earn a Maryland / STEM High School Diploma, Anne Arundel County Public Schools Science, Technology, Engineering and Math Program students are required to complete the following elements:

**STEM Pathway Courses**
3 credit minimum

**Science** - 4 credits
*including 2 credits STEM Systems Science (Biology / Chemistry / Physics)*

**Project-Based Learning I & II** - 1 credit

**Mathematics** - 4 credits
*including 1 credit AP Calculus*

**Computer Science** - 1 credit

**Technology / Engineering**
*including 1 credit Principles of Engineering*

**Social Studies** - 4 credits
*including 1 credit AP Human Geography*

**English** - 4 credits

**World/Classical Language**
3 credit minimum

**STEM Enhanced Fine Arts**
.5 credit STEM Foundations of Art
.5 credit STEM Studio Art 2-D

**Project-Based Learning**
1.5 credit

**STEM Policy**
.5 credit

**Physical Education** - 1 credit

**Health** - .5 credit

**Service Learning Education**
is an integral part of designated course curriculums, starting in elementary school and through a student’s Junior year of high school. The state of Maryland requires all students to have earned a minimum of 75 Service Learning hours prior to graduation.

**Grades/GPA/Class Rank**
The grading system is based on letter values; each letter is appointed a numeric weight. Grades for courses of higher difficulty are given additional weight in calculation.

<table>
<thead>
<tr>
<th>Grading System</th>
<th>Unweighted</th>
<th>Honors Weighted</th>
<th>Advanced Weighted</th>
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<tbody>
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The **Cumulative GPA** is calculated at the end of each semester. **Class Rankings** are based on the cumulative weighted GPA of all students of a single grade level.

**STEM Program Experiences**

**Summer Bridge Programs**
(entering grades 9 - 10)

**Summer Service Learning**
(entering grade 11)

**One Hybrid Course**

**STEM Job Shadowing**
(grades 9 and 10)

**STEM Mentorships**
(grade 11)

**STEM Career Internships**
(grades 11 or 12 / 135 on-the-job hours)

**2 STEM related Competitions**
includes participation in FIRST Robotics

**STEM Portfolio**
course/research experiences in partnership with Anne Arundel Community College

**STEM Corporate & Agency Partners**

American Council of Engineering Companies
Anne Arundel Medical Center
Back Creek Conservancy
Baltimore Museum of Industry
Bass Pro Shops
Bowie Baysox
Boys & Girls Club of Annapolis
Chesapeake Bay Foundation
CRAB Radio - WYZT Annapolis
Cryptologic Museum
Environmental Protection Agency
Federal Data Systems LLC
General Dynamics
Poveromo's World of Saltwater Fishing
Homestead Gardens
Inst of Marine & Environmental Technology
InstallNET International Inc
Johns Hopkins Applied Physics Lab
Jug Bay Wetlands Sanctuary
Keystone Research Solutions LLC
Links Labs

Drum, Loyka & Associates LLC
The Maryland State Attorney's Office
Mathnasium Learning Centers
McCrone Engineering
Moffatt & Nichol Engineers
NASA Goddard Space Flight Center
National Aquarium
National Building Museum
National Sailing Hall of Fame
National Security Agency
The Newseum
Northrop Grumman
Pongos Interactive
Project Liberty Ship
Ripley's Believe It Or Not
Robinson Nature Center
Smithsonian Air & Space Museum
South River Federation
The Spy Museum
US Naval Academy

2020 Program Profile

South River High School