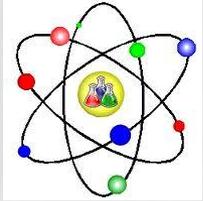
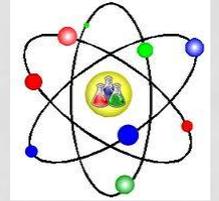


Northern Neck Technical Center



Governor's STEM Academy for



Agriculture and Maritime Studies

James "Greg" Smith, Ed.D.,
Superintendent, Richmond County Public Schools,
Executive Superintendent of the Northern Neck
Technical Center



Governor's STEM
Academy
for Agriculture and
Maritime Studies

Northern Neck Governor's STEM Academy Rationale

Establish clear educational pathways in Science, Technology, Engineering, and Mathematics through Agriculture and Maritime Sciences.



Establish opportunities for experiential or career planning in Agricultural, Marine, & Engineering Professions.



Recognize: Over 30% of STEM jobs will require an associate degree or higher.

Recognize: Architecture & Engineering occupations are projected to increase by 17.54% in the Northern Neck by 2018.



Recognize: In the next 5-10 years 46% of the current STEM work force will be at a potential retirement age.

Northern Neck Governor's STEM Academy Industry Certification

Pathway: Plant Systems

- NOCTI: Forest Products & Processing
- CTECS: Workplace Readiness Skills
- Commercial/Private Pesticide Applicator

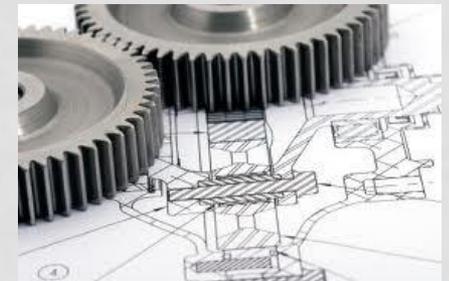


Pathway: Facility & Mobile Equipment (Maritime Maintenance)

- ABYC
- CTECS: Workplace Readiness Skills

Pathway: Engineering & Technology

- IC3 Certification (Certiport)
- NOCTI: Pre-Engineering/Engineering Tech.
- CTECS: Workplace Readiness Skills





Career Pathway: Plant Systems



The Plant Systems Career Pathway will contribute to the economic growth on the Northern Neck through the rebirth of traditional agricultural career opportunities in combinations with the twenty-first century career.

The 2007 Census reported that there were 3,114 farms in the Northeast District, with 634,909 acres of farmland under cultivation. The emergence of nontraditional farms, such as organic vegetable farms, wineries/vineyards, and turf management industries, has created a new dynamic in agricultural communities.



The Northern Neck Governor's STEM Academy will provide twenty-first-century agricultural knowledge.

Possible Careers:

Wildlife Manager, Forest Technician, Water Monitoring Technician, Ecologist, Agricultural Educator, Park Manager, Pulp & Paper Manager.



Career Pathway: Facilities & Mobile Maintenance



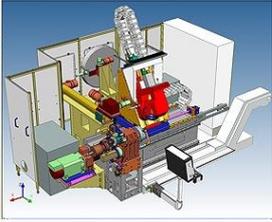
The Facilities & Mobile Maintenance (Maritime) will equip students with the necessary skills set to work in the maritime maintenance industry.

The projected employment number for 2018 for jobs in the Facilities & Mobile Equipment Maintenance pathway in the Northern Neck is 12,773, which is 6.37% higher than the 2008 figure.

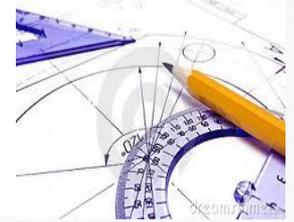


Possible Careers:

Motorboat Mechanic, Industrial Equipment Mechanic, Engineer, Diesel Engine Specialist, Diesel Service Technician/Mechanic, Industrial Electrician, Facility Maintenance/Manager/Engineer



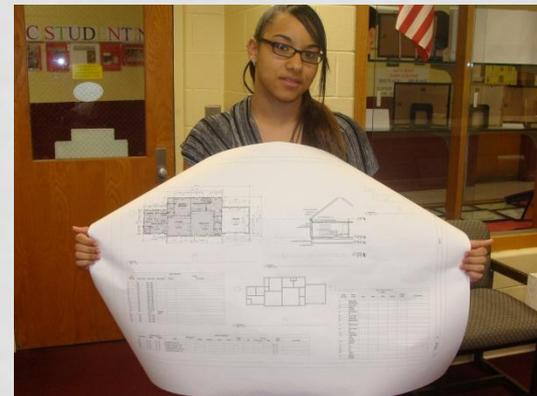
Career Pathway: Engineering & Technology



The Engineering & Technology pathway students will be qualified to embark on a career path in either the architecture or engineering occupational fields throughout the Northern Neck.

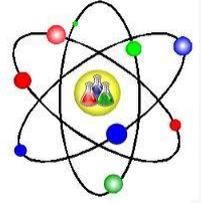
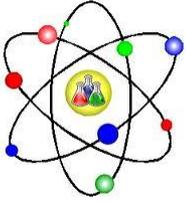
By 2018, engineering and architecture jobs are predicted to increase by 16.3% in the Commonwealth and on the Northern Neck, this figure is 17.54%, putting careers in the Stem Career Cluster among the fastest growing in the region.

For Example: civil engineer jobs Northern Neck are predicted to experience growth of 34.44% by 2018.



Possible Careers:

System Engineers, Mechanical Engineers, Architectural Engineer, CAD Technician, Drafter, Electrical/Electronic Technician, Manufacturing Technician, Industrial Engineer/Technician, Systems Engineer



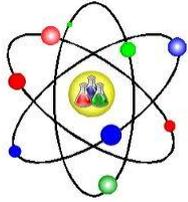
Northern Neck Governor's STEM Academy Goals

Maximize opportunities in preparing Northern Neck public school students for targeted careers in engineering and technology by increasing academic rigor and relevance.

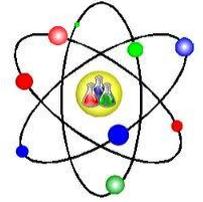
- * 100% of Academy students will complete Algebra II or other advanced mathematics courses.
- * 100% of Academy students will take four years of science.
- * 100% of Academy students will participate in partnerships/internships with traditional/nontraditional employers and industries.
- * 25% of Academy students will represent nontraditional populations.

Increase students' awareness regarding careers in engineering/technology and further student interest and enrollment in science, technology engineering, and mathematics courses.

- * 100% of students surveyed will indicate that engagement in career planning, project based/experiential learning, & on-site experiences has assisted in increasing their awareness of STEM careers in Maritime & Agricultural career paths.
- * 100% of Academy students will earn at least nine transferable credits through dual enrollment & AP courses.
- * 75% of Academy completers will seek engineering and technology related postsecondary degree programs or training in related fields.



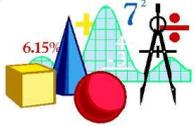
Northern Neck Governor's STEM Academy Goals



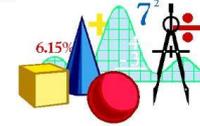
The Academy will provide highly qualified employees to support work force needs in Maritime and Agricultural industries in the Northern Neck, Eastern Shore and Central Virginia regions.

**100% of Academy completers will possess state/nationally approved credentialing.
75% of Academy completers will secure employment in Maritime and Agricultural related engineering or technical occupations following degree completion or postsecondary training.**





Governor's STEM Academy



Objectives and Performance Measures

The Academy will begin operating in 2013-2014 school year. It is projected that a minimum of 144 students in grades nine through twelve will enroll in the program.

- Students will maintain a 2.5 GPA and improve their academic achievement. Documented by student transcripts.
- Students will earn between 9 and 12 transferable credits from dual-enrollment and/or AP courses, as evidenced on the student transcript.
- Academy work-based learning internships will be completed and coordinated with the businesses in the summer between the 11th & 12th grade and documented by time sheets, written summaries of the experiences written by the student, and evaluation form completed by the employers.
- The Academy program will increase on-time graduation rates and reduce dropout rates, as evidenced on the school report card for each of the six school divisions.



Governor's STEM Academy

Objectives and Performance Measures



- The Academy will assist in increasing enrollment and retention in postsecondary education, while reducing the number of students requiring remediation in college.
- The Academy will increase the number of students completing the Workplace Readiness Skills for the Commonwealth examination, a college-readiness skills curriculum, industry certification and credentialing tests.
- The Academy will increase the number of graduates employed in high-wage, high-demand, and high-skill careers.



Governor's STEM Academy Student Recruitment

- **Print Materials**
- **Introductory PowerPoint Presentation**
- **Region wide school presentations and recruitment (Middle and Secondary)**
- **Individual student contact by school guidance counselors**
- **Parental information packet disseminated to potential student households**
- **School and community announcements**
- **Career/Partnership/Internship Connections**



Governor's STEM Academy Admission Guidelines

Completed Application Including:

- Teacher Recommendations
- School Counselor Recommendations
- Student Interest Survey
- Parent Permission
- Completed Rappahannock Community College Enrollment Application
- Copy of Transcript
- Selection Committee Review/Acceptance

Staff Qualifications

- Hold a Virginia Teacher Licensure
- Have Industry-Specific Education & Certification/Endorsements within the relevant career pathway
- Academy postsecondary staff partners will meet requirements set forth by Virginia Commonwealth College System



Staff Development



- Academy will provide staff development through The College of William and Mary & the Rappahannock Educational Consortium
- Will participate in local, state and national professional development activities: (Virginia Children Engineering Conventions seminars)
- Will be provided time for collaborative curriculum development between secondary and postsecondary staff
- Virtual online instruction & training for CAD teacher
- Provide training for K-12 Mathematics & Science Teachers

AP/Dual Enrollment Course Opportunities

AP Courses	Dual Enrollment Courses
Calculus	English Composition I & II
Mathematics	Physics I & II
Biology	Math Pre-Calculus I & II
Chemistry	Marine Service Technology I & II
Environmental Science	Horticultural Science
Physics	Greenhouse Plant Production & Management
	Landscaping I & II

Academy Experiential Learning

Summer Internships

Job Shadowing

Mentorships

Combinations

Service Learning

Student Proposals

- Focus on Maritime & Agricultural Experiences
- Minimum of 40 hours

Governor's STEM Academy Advanced Academic Programs

Grade 7

Pre-Algebra & Life Science

Grade 8

Algebra I & Physical Science

Grade 9

Geometry & Earth Science or Biology

Grade 10

Algebra II & Biology
or Chemistry

Grade 12

Calculus, AP Mathematics,
AP Biology, AP Chemistry,
AP Physics, AP
Environmental Science

Grade 11

Math Analysis,
Trigonometry,
Statistics & Chemistry
or Physics

Governor's STEM Academy

Distance Learning & Virtual Learning

Blackboard Learn

www.blackboard.com



Autodesk Design Academy Suite with Subscription Services:

❖ Curriculum Resources

➤ www.curriculum.autodesk.com

❖ Home Student Licenses

➤ www.students.autodesk.com

❖ CAD Learning Webpage

➤ www.rawl.cadlearning.com



Governor's STEM Academy Implementation Timeline

- **November 2012-August 2013:**
Planning, Development, Training, Recruitment, Marketing, Orientation
- **September 2013-June 2014:**
1st Year of NN STEM Engineering and Technology Pathway courses
1st Year of NN STEM Plant Systems Pathway Courses
- **May 2014-August 2014**
Academy Assessment & Critique
- **June 2015**
1st (Completer) Graduates of Academy
- **May 2015-August 2015**
Academy Assessment & Critique
- **September 2015-June 2016:**
1st year of NN STEM Facility and Mobile Equipment Maintenance Pathway Courses
- **January 2016**
Academy Graduate Follow-up

THANK YOU!

Northern Neck Governor's STEM Academy Partners



Historyland Nursery

Northern Neck Technical Center



Richmond County Extension Office



Northern Neck Nursery



Montague Farms



White Point Marina, Inc.

*Northern Neck
Vegetable
Growers
Association*