

The George C. Marshall Governor's STEM Academy

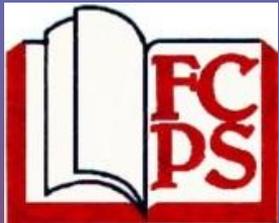
Proposal to establish a Governor's
STEM Academy presented to the
Virginia Board of Education

May, 23 2013

GEORGE C. MARSHALL
HIGH SCHOOL



SMALL SCHOOL
BIG
HEART



The George C. Marshall Governor's STEM Academy

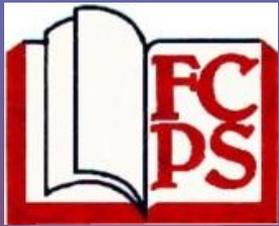
RATIONALE

- The most common industry need in the Tysons Corner area is a STEM workforce (40 percent)
- Technology has become a key component in all occupational fields
- Growth in STEM fields is expected to grow by 17 percent from 2008 - 2018

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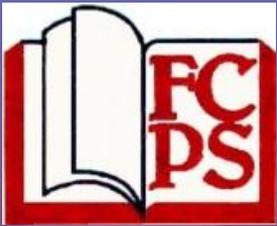
RATIONALE - TYSONS CORNER



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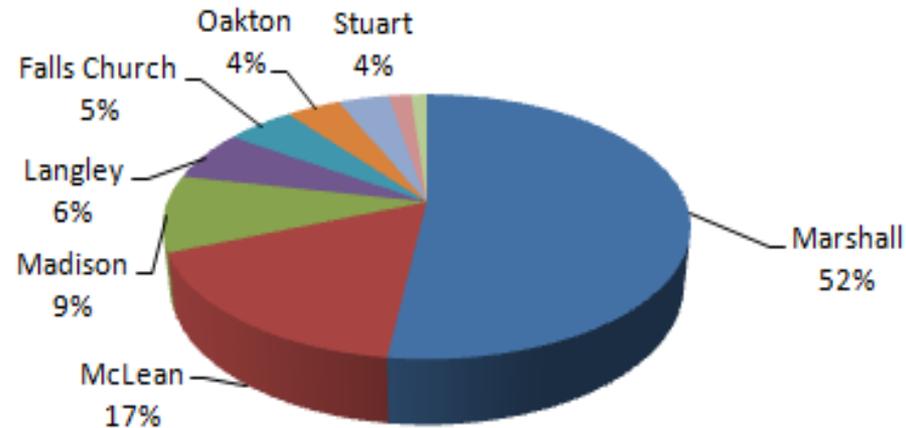
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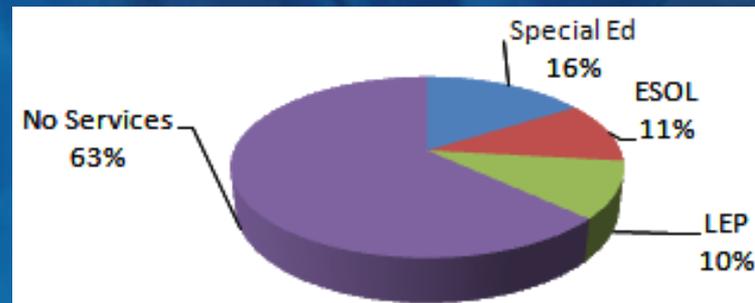
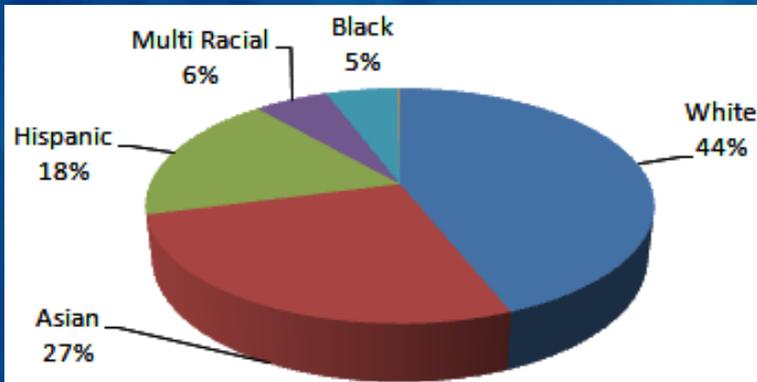
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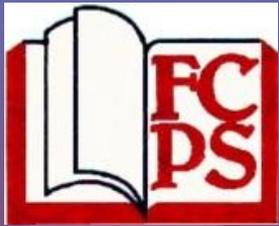
STUDENTS WE SERVE

Marshall High School	405
McLean High School	132
Madison High School	73
Langley High School	48
Falls Church High School	39
Oakton High School	31
Stuart High School	29
Alternative Schools	13
Other	9

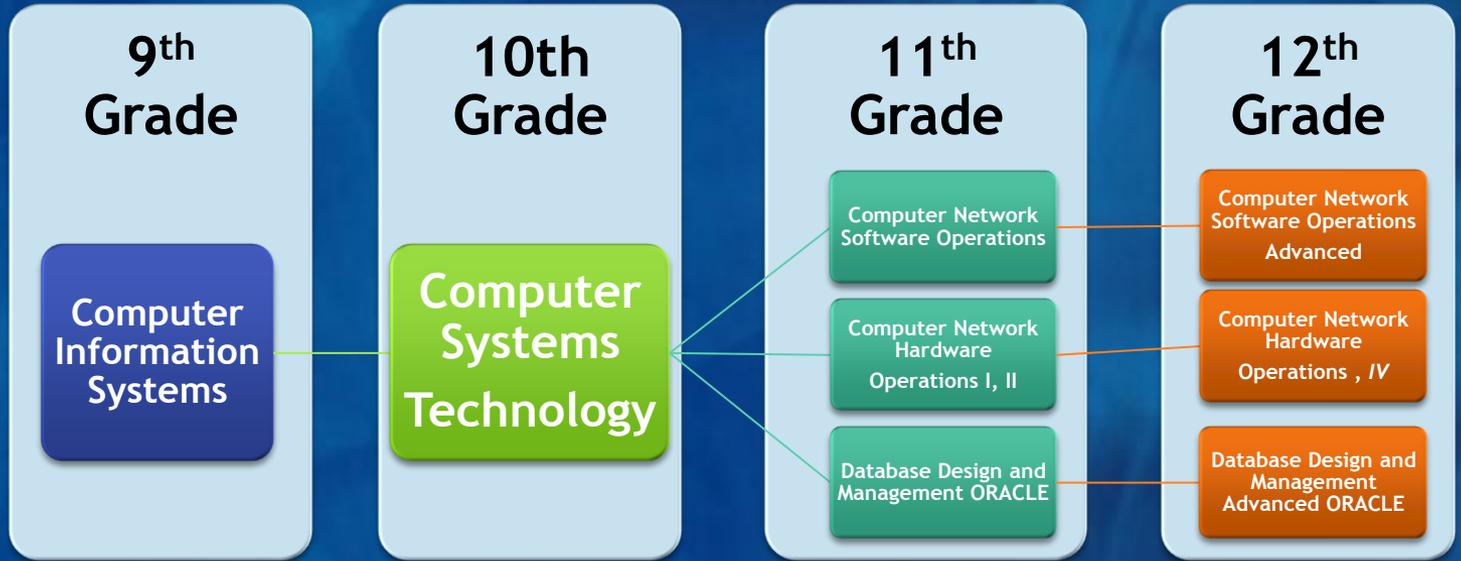


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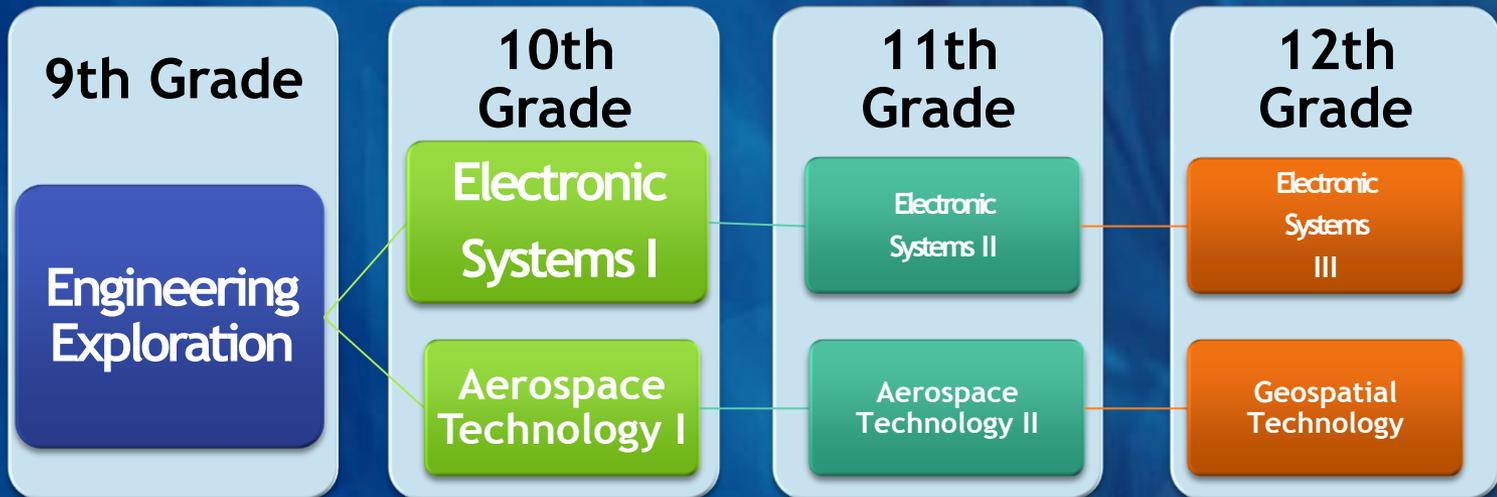




Information Technology: Network Systems Pathway



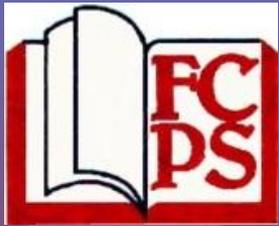
STEM: Engineering and Technology Pathway



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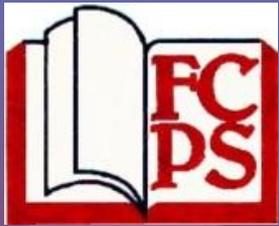
GOALS

- Develop a highly-skilled, diverse STEM high school graduate prepared for postsecondary education or the global workforce
- Increase student knowledge and interest in STEM careers
- Develop, implement, and strengthen STEM course program access and quality

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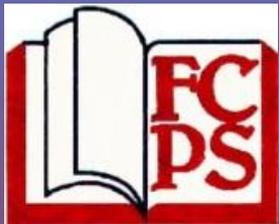
PERFORMANCE MEASURES

We are committed to increasing:

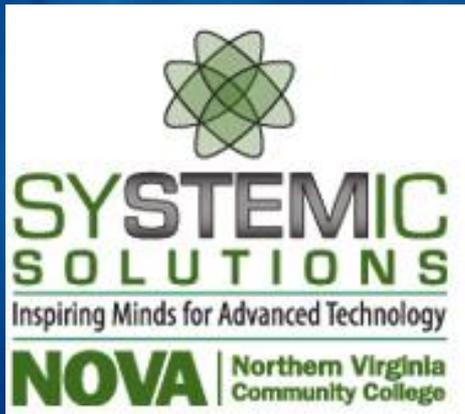
- Performance in advanced math courses
- Students meeting requirements for the Advanced Diploma
- Post-secondary enrollment and retention
- Number of students college & career ready
 - Participating in career experiences
 - Complete and pass Workplace Readiness Skills (WRS)

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The George C. Marshall Governor's STEM Academy PARTNERSHIPS

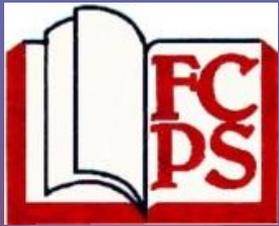


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Ted and Karyn Hume Center
for National Security and Technology





The George C. Marshall Governor's STEM Academy

THANK YOU

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Proposal to the Virginia Board of Education

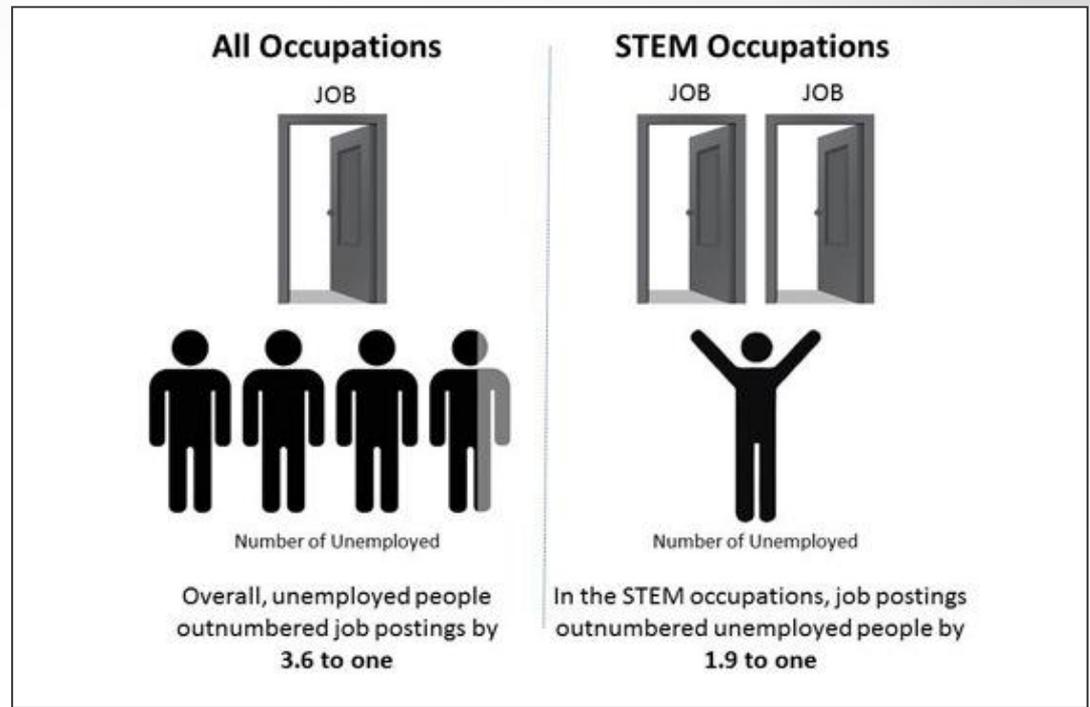
May 23, 2013



HHS GOVERNOR'S STEM ACADEMY

Science Technology Engineering Mathematics

Rationale



changetheequation.org

THE MAJORITY OF STEM JOBS IN VIRGINIA WILL REQUIRE POSTSECONDARY EDUCATION OR TRAINING BY 2018

High school or less	26,980	7%
Some College/No Degree	56,460	15%
Associate's degrees	31,090	8%
Bachelor's degrees	157,360	42%
Master's degrees	90,860	24%
Doctoral degrees	11,560	3%
TOTAL^A	374,310	100%



Goals

- Inspire students to pursue interests and rigorous STEM coursework that creates pathways for postsecondary study
- Develop 21st century skills: critical thinking, problem solving, creative thinking and innovation, communication, collaboration, media literacy
- Expand partnerships to broaden student opportunities
- Engage students with real-world problems, problem-based learning, and exciting opportunities
- Provide opportunities to take advanced classes in mathematics, science, engineering, and computer science
- Increase the number and diversity of students achieving an advanced studies diploma



Program Overview

S T E M

Engineering
And
Technology

Science
and
Mathematics



Capacity Building



HHS GOVERNOR'S
STEM ACADEMY

Science Technology Engineering Mathematics

I-STEM

Integrative Science,
Technology, Engineering
and Math



STEM

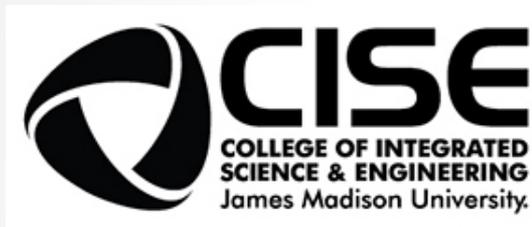
Explorations Academy

Projected Enrollments

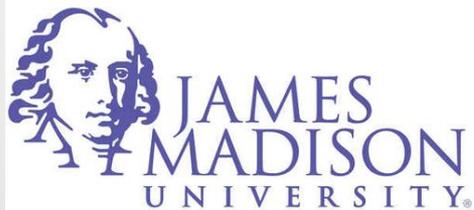
	Engineering And Technology	Science and Mathematics
2012-13	24	
2013-14	48	50
2014-15	72	100
2015-16	96	150
2016-17	96	200



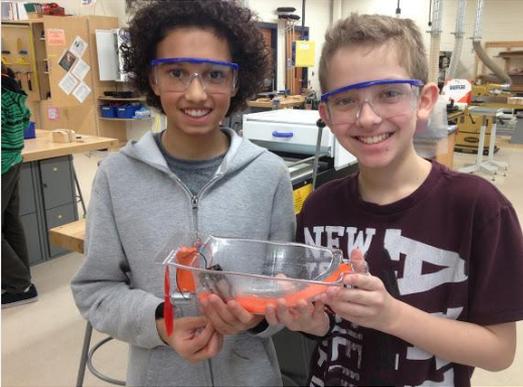
Partnerships



Bringing service to life



Thank You



HHS GOVERNOR'S
STEM ACADEMY

Science Technology Engineering Mathematics

The MCPS Governor's STEM Academy

At Christiansburg High School
Montgomery County Public Schools

*Advancing Excellence in Education
for Virginia's Economic Future*

May 23, 2013 Presentation – Virginia Board of Education

Local Employment Need

Montgomery County's Workforce:

12% Manufacturing

5.4% Scientific and Technical

Employees needed in:

Engineering and Technology Manufacturing

Production Process and Development

Production

Programming and Software Development

Information Support and Services Network Systems

Program Description

The MCPS STEM Academy as proposed will be a deliberate connection of related career pathways that will culminate in a capstone project that emphasizes STEM disciplines and work place readiness skills.

Academic and Career and Technical Education courses will be fully integrated to improve all instruction.

Program Courses

Technical Drawing and Design

DE8435 Technical Drawing and Design

DE8436 Engineering Drawing and Design

DE8437 Architectural Drawing and Design

DE8438 Advanced Drawing and Design

Welding

DE89190 Welding I

DE80191 Welding II

8674 Welding III

Pre-engineering

DE8439 Introduction to Engineering Design

DE8441 Principles of Engineering

DE8442 Computer Integrated Manufacturing

Precision Machining

8439 Precision Machining I

DE8540 Precision Machining II

8541 Precision Machining III

Program Courses

Computer Programming

DE6612 Computer Information
Systems

DE6640 Programming,
DE6641 Advanced
Programming

Computer Information Systems

DE6612 Computer Information
Systems

6613 Advanced Computer
Information Systems

Computer Systems Technology

8621 Computer Maintenance
Advanced

8622 Computer Systems
Technology I

8623 Computer Systems
Technology II

8624 Computer Systems
Technology III

Post Secondary Opportunities

New River Community College Transfer Programs

Engineering
Engineering -Computer Science
Computer Science
Information Technology

New River Community College Terminal Programs

Machine Technology, AS Degree
Machine Shop Operations,
Diploma
Welding, Certificate

Virginia Tech Programs

Engineering
Computer Science

Radford University Programs

Computer Science and
Technology: Computer
Science Concentration
and
Networks Concentration

Partnership Capacity

President, Automation Creations, Inc.

Training Manager, Corning

General Manager, Jeld-Wen Interior Doors

Director, Montgomery County Department of Economic
Development

Production Manager, Moog Components Group

Career Pathways Coordinator, New River Community College

Dean, Business & Technologies, New River Community
College

Vice-President, OWPR Architects and Engineers

Executive Officer, Roanoke, Blacksburg Technology Council

Director, Institute for Creativity, Arts, and Technology,
Virginia Tech

Associate Professor, Technology Education, Virginia Tech

Manager, Mountain Precision Tool

Grant Manager, Business & Technologies, New
River Community College

Deputy Director, NRV Competitiveness Center

Research Associate, Institute for Creativity,
Arts and Technology,, Virginia Tech

Program and Career Advisor, Mechanical
Engineering Department, Virginia Tech

Director, VT-STEM, Virginia Tech

Senior IT Security Analyst, Virginia Tech,
Security Office

Facilities Director, VT Corporate Research
Center



New River/Mount Rogers
Workforce Investment Area

New River
COMMUNITY COLLEGE

Program Completion

- Maintain a 3.0 grade point average.
- Complete an appropriate STEM Plan of Study as designed by student, parent, counselor and career coach.
- Complete a STEM field experience (minimum of 15 hours).
- Successfully complete all courses within a specific Academy pathway for high school credit, including a CTE completer sequence of courses.
- Earn an industry certification and/or at least nine transferrable college credits.