Snapshot of STEM Opportunities for Youth in Fairfax County

Fairfax Office of Public Private Partnerships (OP³)
January 26, 2017
Draft
Why Conduct a STEM Snapshot – Purpose?

• Preparing a workforce to meet the high-demand, high-growth job area of STEM is a priority of the *Fairfax County Strategic Plan to Facilitate Economic Success*.

• Providing students with career pathways and industry certifications through community partnerships is a priority of Fairfax County Public School Strategic Plan, *Ignite*.

• To inform these goals, OP³ in partnership with community stakeholders prepared a SNAPSHOT to identify the type and scope of STEM (science, technology, engineering and math) programs that are available to Fairfax County youth in our community.
Evidence of Need for STEM Workforce

• STEM jobs are growing at 1.7 times the rate of non-STEM jobs, and the U.S. is not producing enough candidates to fill them.  

• The greatest growth in jobs in Fairfax County continues to largely come from STEM-related fields.  
  (Fuller, The Driving Forces Behind Fairfax County’s Future Growth, 2014)

• As of 2011, 20% of all jobs require a high level of knowledge in any one STEM field.  
  (Brookings, The Hidden STEM Economy, 2013)

• Half of all STEM jobs nationwide are available to workers without a four-year degree, and these jobs pay $53,000 on average, a wage 10 percent higher than jobs with similar educational requirements.  
  (Brookings, The Hidden STEM Economy, 2013)

• Only 16% of high school seniors are interested in pursuing STEM careers.  
  (U.S. Department of Education STEM, 2016)
STEM Snapshot Process and Scope

• OP³ in partnership with Fairfax County Agencies and Fairfax County Public Schools defined
  • Scope
  • Variables
  • Key informants
for STEM opportunities for youth K-12

• OP³ secured pro-bono researcher to collect data during Spring 2016
  • Conducted in-person interviews conducted with 26 STEM stakeholders
  • Collected data on in-school and out-of-school time STEM opportunities
  • Reviewed the current research from national STEM organizations
  • Identified key issues and considerations for future action

This assessment does not include every private and public sector STEM program available to youth in Fairfax County.
STEM Snapshot Contributors

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The Children’s Science Center
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Project Lead the Way

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1/26/2017
Snapshot Observations

• FCPS provides a broad range of STEM opportunities, through core curriculum, STEM electives, and academies. FCPS partners to provide out-of-school activities beyond those in the classroom.

• FCPS offers a robust number of career and technical courses with industry certifications, however only a limited number of students pursuing these certifications obtain them.

• In addition to those offered by FCPS, STEM opportunities are available for youth in our parks, libraries, community centers, and through private programs and facilities.
  
  • The majority are offered during out of school time and address all four components of STEM as opposed to being focused on a single component of STEM (e.g. math).
  • The majority of STEM opportunities have broad goals such as providing enrichment or creating awareness as opposed to a single focus such as career preparedness or academic achievement.
Snapshot Observations (cont’d)

- Outcome measures are largely focused on increasing awareness and interest in STEM. There is limited information on how these programs affect longer-term outcomes such as student achievement, course selection, or career choices.

- Most STEM camps, including those offered through Fairfax County Parks, and private enrichment classes are fee-based, but a significant number of opportunities have no fees to participate (Department of Neighborhood and Community Services Computer Clubhouses, Fairfax County Public Libraries and Fairfax County Public School Academies and certifications).

- Many STEM opportunities are provided through partnerships. A program may be offered by a government agency, nonprofit organization or school, with financial and in-kind support from corporations and/or foundations. While there are many examples of partnership between organizations, there is limited coordination or collaboration of these activities county-wide.
<table>
<thead>
<tr>
<th>Elementary: K-6</th>
<th>Middle: 7-8</th>
<th>High: 9-12</th>
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<tr>
<td><strong>FCPS STEAM Office Support</strong></td>
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<td><strong>Math and Science Courses</strong></td>
<td><em># and selection required for graduation dependent on diploma type</em></td>
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<td><strong>Access to Integrated Curriculum</strong></td>
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<td><strong>Get2Green Eco-schools</strong></td>
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<td><strong>Coding - Hour of Code, Computer Science/Programming Courses, etc.</strong></td>
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<td><strong>STEM/STEAM Labs</strong></td>
<td><strong>Elective STEM Courses Offered</strong></td>
<td><strong>Industry Certifications</strong></td>
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<td><strong>Makerspaces</strong></td>
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<td><strong>Cyber Security/Cyber Patriot</strong></td>
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<td><strong>Career &amp; Tech Ed Academies</strong></td>
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<td><strong>Thomas Jefferson HS for Science &amp; Technology</strong></td>
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<td><strong>STEAM Clubs</strong></td>
<td><strong>Career Technical Student Organizations (CTSO)</strong></td>
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<td><strong>Robotics – FIRST Lego League, VEX</strong></td>
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<td><strong>Summer Enrichment Camps</strong></td>
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<td><strong>Family STEM Nights</strong></td>
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<td><strong>Science and Engineering Fair</strong></td>
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Elementary

In-School Opportunities

- STEAM Labs
  - 60+ schools have STEAM-related labs
  - Programs provide engaging standards aligned STEAM learning opportunities: problem- and project-based learning, robotics, coding, hands-on experiments, etc.
- FCPS-developed integrated STEAM Curriculum
  - Grade 6 Energy Unit – Optional participation in annual KidWind Challenge
- Problem- and project-based learning instructional model
- Makerspace in classrooms and libraries
- Career Day with STEM professionals
- Guest Speakers for National Engineers Week

Out-of-School Opportunities

- STEM Clubs
  - Girls Excelling in Math and Science (GEMS),
  - Student Leadership Academy,
  - Junior Engineer-in-Training
  - Mad Science
  - STEAM Works
  - 21st Century Girls
- Environmental Clubs, Get2Green
- FIRST Lego League
- Science Olympiad
- Family STEM, Science, and/or Math Nights
Middle

In-School Opportunities
- STEM business partnerships at 7 middle schools
- STEM elective courses
- Project Lead The Way
  - Design and Modeling
  - Automation & Robotics
- PBL instructional models

Partial List of STEM Courses
- Engineering Design and Modeling
- Computer Solutions
- Digital Input Technologies
- Engineering Simulation & Fabrication

Out-of-School Opportunities
- NASA STEM Challenge (You4Youth)
- Technology Student Association
- KidWind Challenge
- Environmental Clubs, Get2Green
- FIRST Lego League
- Science Olympiad
- Family STEM, Science, and/or Math Nights
High Career and Technical Education Academies

- Edison, Fairfax, Chantilly (STEM), Marshall (STEM), Falls Church (Health and Sciences), and West Potomac (Health and Sciences)
- Offer advanced technical and specialized courses that integrate career and academic preparation for post-secondary education
- Provide opportunities to obtain industry certification and career experiences

Partial List of STEM Courses

- STEM Engineering
- IB Design and Technology
- Programming
- Cyber
- Electronics
- STEM Robotics
- Architectural Drawing

Thomas Jefferson HS for Science and Technology

- Recently ranked America’s Best High School by Newsweek magazine
- Offers a comprehensive program that focuses on scientific, mathematical, and technological fields
- All courses are taught at the gifted, honors, Advanced Placement (AP), or post-AP level.

Edison Global STEM Challenges Program

- STEM focused, interdisciplinary three-year program focusing on authentic global problems
- Integrates traditional mathematics, science, and engineering curricula into an integrated course sequence
FCPS Career and Technical Education Certification—A Pathway Toward STEM Careers

Quick Facts for FCPS 2014-15

- 131 career and technical courses offer a certification option
- Of 20,382 certifications awarded in 2015, the majority for *Workplace Readiness Skills for the Commonwealth* (7,282) and for *Financial Literacy (WISE)* (9,686) certifications
- Fewer number of students pursue STEM-related certification options
- Industry certifications are a graduation requirement for standard diploma only; not required for advanced diploma

Sample STEM-related certifications awarded in 2014-15

- Microsoft Office Specialist, 720
- Autodesk and Certiport: Revit Certified User, 114
- Pharmacy Technician, 109
- A+ Essentials Examination, 50
- A+ Practical Application, 35
- Autodesk and Certiport: AutoCAD Certified User, 34
- Cisco (ICND 100-101), <10
### Large Impact STEM Programs in the Community

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>SERVED ANNUALLY</th>
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<tbody>
<tr>
<td>Fairfax County Department of Neighborhood and Community Services (NCS) Technology Centers</td>
<td>Varies by site</td>
</tr>
<tr>
<td>Fairfax County Parks STEM programs and activities</td>
<td>13,599</td>
</tr>
<tr>
<td>Fairfax County Public Library branches offer STEM/STEAM programs</td>
<td>2,900</td>
</tr>
<tr>
<td>Fairfax County Parks STEM/STEAM Summer Camps</td>
<td>6,136</td>
</tr>
<tr>
<td>Fairfax County Public Schools Summer Camps</td>
<td>760</td>
</tr>
<tr>
<td>Northern Virginia Community College STEM partnerships, including sySTEMic Solutions</td>
<td>~3000</td>
</tr>
<tr>
<td>First Robotics in 9 High Schools</td>
<td>~25-30/ high school</td>
</tr>
<tr>
<td>Children’s Science Center, located in Fairfax County</td>
<td>70,000+ annually</td>
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Adult Education Programs Expand Capacity to Reach Fairfax County Youth with STEM

Five programs are notable for helping adults improve the quality of their STEM teaching, coaching and mentoring:

• Fairfax County Office for Children – serving
  • Pre Early Childhood Education in STEM for 1,600 childhood care providers
  • Early Childhood Education in STEAM for 1,200 childhood care providers

• Fairfax County Public Schools and Wolftrap Foundation for the Art
  • Artist in Residence/Teacher Professional Development

• Fairfax County Public Libraries
  • Early Literacy Outreach-teach teachers and day care providers how to “sneak” science into curriculum

• Northern Virginia Community College sySTEMic Solutions
  • 28 teachers provided professional training in VEX Robotics and Cyber Patriot to increase capacity in schools and clubhouses
Digging Deep: Identifying Key Issues

1. Increase Interest and Opportunity Among Girls and Minorities in STEM
2. Highlight STEM in Education and Career Planning
3. Meet the Urgent Need for Technology Talent
4. Measure Impact and Effectiveness of STEM programs
5. Optimize our STEM Assets through Increased Stakeholder Collaboration

Key Issues

Interview Results
- Stakeholder Feedback
- Examples
- Current Assets
- Data collected on Programs

Literature Review & Research

National & State Models

Action (Next) Steps
Issue #1: Increase Interest and Opportunity For Girls & Minorities in STEM

**Interview Results:**

Cost, family participation and transportation were cited as barriers to participation. 60% of park programs are fee-based. Robotics programs can require significant parental financial contributions. In response, a number of the organizations are investing in STEM/STEAM programs focused on girls including the Community Foundation of Northern Virginia Business Women’s Giving Circle.

**Research:**

- US News/Raytheon Index reports racial and gender gaps wide in STEM fields.
- Girls lose interest in STEM if attention not captured by 5th grade, Girl Scouts Generation Stem.
- Of college freshman, 20% of young women intend to major in STEM fields, 50% of young men.
- Yet, girls tend to outperform boys in earned credits in STEM/STEAM courses in high school.

**Next Steps:**

Highlight, promote, and expand STEM programs in Fairfax County that successfully engage underserved populations with an interest and aptitude in STEM to build greater career interest including county programs offered by Neighborhood and Community Services, Fairfax County Public Libraries and Fairfax County Parks. Post opportunities on common “landing page” (e.g. Fairfax County Public Libraries)
Issue #2: Increase awareness about STEM career and educational pathways among FCPS youth and families

“Our youth need handholding, an investment of time, specific knowledge in STEM careers and requirements, and follow-up through early years in post-high-school education/training” – a STEM non-profit leader and counselor

Interview Results:

“Many students from underserved populations follow in their parent’s path parents, directly to the workforce despite their aptitude and interest in STEM” – Computer Clubhouses

Create greater awareness among school counselors about FCPS Career and Technical Education courses and career opportunities—FCPS Career and Technical Education Advisory Committee Annual Report, 2015

Next Steps:

Focus on student’s FCPS Student Learning Plan, the gateway to student planning, http://www.fcps.edu/is/slp/ so that STEM course selection is maximized beginning in 7th grade

Encourage greater use by students and their families of online planning tools to inform course selection and career development, i.e., Family Connection and Naviance

Create greater awareness among school counselors about CTE courses and career opportunities
Issue #3: Meet the Urgent Need for Technology Talent

Corporate leaders cite the greatest workforce need in Fairfax County/Northern Virginia is in those with certificates, degrees, and experience in technology (the T in STEM – Technology skills are in highest demand).

Interview Results:

Northern Virginia Technology Council (NVTC) is producing needs assessment of specific, workforce needs of regional technology, with focus on most in-demand job categories and any gaps in skill sets of current workforce, including certifications, experience and soft skills.

Research:

• 71% of new STEM jobs are in computing, but only 8% of STEM college graduates are in Computer Science.
• Virginia currently has 35,786 open computer jobs according to data from Code.org.
• Yet, Virginia had only 1,419 computer science graduates in 2014; only 19% were female.
• Northern Virginia Technology Council reports that 55% of NVTC members are hiring cybersecurity professionals this year; 17,000 of 31,000 tech openings are in cyber.

Next Steps:

Utilize research findings about workforce development and high demand employment to inform and create awareness among youth, their families, schools and the community about opportunities.
Track and understand college applicants and graduates geographic, career, and higher education destinations.
Issue #4: Measure Impact & Effectiveness of STEM Programs

**Interview Results:**

- Many organizations reported program outcomes that showed “a high-level of increased interest in STEM subject and careers” among youth.
- However, data is not available on tracking students from high-school to college to the workforce in Fairfax County/Northern Virginia. There is limited data collection at the local or national level that measures how interest in STEM translates to expertise in the workforce.

**Research:**

- The Afterschool Alliance defined 3 major outcomes that are achievable to measure for out of school time programs:
  - Youth develop interest in STEM and STEM learning activities
  - Youth develop capacities to productively engage in STEM learning activities
  - Youth come to value the goals of STEM and STEM activities
  - These outcomes don’t measure our success in fueling and filling the workforce pipeline; research is inconclusive about the impact of these programs on workforce development.

- Noyce Foundation - “Although many of these initiatives are quite sophisticated in tracking outcomes of individual program components, none of them have developed a way to track the impact of all the interconnections they are building among STEM learning experiences. Doing this will require tools that can assess a broad range of outcomes across learning settings, including interest, engagement and perseverance in STEM over time; STEM proficiency; participation and success in STEM study during the secondary and post-secondary years; adult STEM knowledge; and more.”

**Next Steps:**

Identify opportunities to improve data collection and/or share existing data on the impact of youth participation in STEM programs on their future education and career opportunities.
Interview Results:
Fairfax County and Northern Virginia have many STEM assets: a wide variety of programs offered by nonprofits, county government, private companies, a comprehensive set of programs offered in the Fairfax County Schools System and a spectrum of supportive corporations, particularly technology based companies focused on growing the technology workforce.

However, most interviewees, when asked if they worked in any formal alliance or collaborative group said no—beyond collaboration one on one (e.g. NPO to Schools) or through the limited resources of NOVA sySTEMic Solutions.

- “There are so many options, need more focus on what is effective to maximize the impact of our philanthropic dollars.” — corporate informants
- Anecdote- On one March 2016 weekend, 3 major STEM events for youth were simultaneously happening in Fairfax County – and that doesn’t account for others in the broader region.

Research:
The Federal STEM Portfolio Report looked at federal investments and observed “Duplicate investments focus on the same primary objective, audiences, products or services, and fields within STEM.”

Next Steps:
From a local perspective, identify ways to maximize existing investment in STEM and identify which programs are most effective in connecting youth to STEM career and educational opportunity.
A STEM Learning Ecosystem includes:

1. Home
2. School
3. After-school/Summer Program
4. STEM-focused institution

“A STEM learning ecosystem encompasses schools, community settings such as after-school and summer programs, science centers and museums, and informal experiences at home and in a variety of environments that together constitute a rich array of learning opportunities for young people. Anchored by strong leaders and a collaborative vision and practice.” – Noyce Foundation

Requires an organization or group to drive the ecosystem, foster collaboration.
Example of Successful STEM Eco System:
North Carolina STEM Center

The NC STEM Center is a web portal for all things related to STEM in North Carolina. Goal is to ensure all North Carolinians have access to STEM learning that provides them economic opportunity.

Partnership between the Public Schools of North Carolina, North Carolina Community Colleges, the University of North Carolina, the North Carolina Science, Mathematics, and Technology Education Center and the Buroughs Welcome Fund.

Provides centralized information on high-quality and engaging STEM programs in statewide database, share resources with others across North Carolina and the nation, and connect with others dedicated to ensuring the success of NC students.
Example of Successful STEM Eco System:
North Carolina STEM Center

About the NC STEM Center Site:

Our goal is to ensure all North Carolinians have access to STEM learning that provides them with good choices in life and reinforces the economic strength of their community.

- Learn about the importance of STEM education for North Carolina.
- Find high-quality and engaging STEM programs in our statewide program database.
- Share resources and knowledge with others across the state and nation.
- Connect with others dedicated to ensuring the success of all North Carolina students.

The Connectory & NC STEM Center collaboration

Do you have a program doing great work to promote science, technology, engineering and mathematics education in North Carolina? You can now share it through the NC STEM Center. And now, through our partnership with The Connectory, programs listed on NC STEM Center are sent to The Connectory’s national database for possible inclusion. Click here to get started...
What is Virginia Doing at the State Level?

Launching Virginia STEM-Now – a State-Level Network

The goals are to inspire the building of a strong STEM workforce and education pipeline, to integrate business and education efforts, to initiate communication among all stakeholders and to innovate promising practices that can be replicated or scaled.

Virginia STEM-Now is partnering with the Science Museum of Virginia to develop, host and promote STEM enrichment activities throughout the state—Amy Harris, Virginia STEM

Interview Results:

- Virginia STEM –Now is Virginia's response to the Statewide STEMx Network that aims to educate: defines what quality STEM teaching and learning looks like and connects state networks and partners across the country to accelerate the spread of universally rigorous and transformative STEM educational opportunities to reach and impact more students.

- Engage - Spurs partnerships and engages stakeholders across K-12 and higher education, business, government, philanthropy and the community to amplify STEM teaching and learning opportunities for students across the Network and the country

- Exchange - Promotes sharing of high-quality STEM resources and tools that span STEM teaching and learning, quality metrics and measurements, policy and advocacy, communication and community engagement and state network planning and ultimately increase student achievement.

Research:

Next Steps:

Explore ways to collaborate with Virginia STEM-Now network and benefit from best practice information shared.

Identify strategies to increase collaboration and awareness within our own community about range of STEM enrichment programs currently being offered.
Reference Documents/Links

- Code.org, Promote Computer Science, https://code.org/promote
- Fairfax County Public Schools, Career and Technical Education, http://www.fcps.edu/is/cte/index.shtml
- Fairfax County Public Schools, http://www.fcps.edu/is/steam/
- Northern Virginia Technology Council, Cybersecurity infographic,
- State Council for Higher Education for Virginia, http://www.schev.edu/
- STEMx™ - www.stemx.us
Appendice

• Additional Detail on Study Method and Results
Snapshot Study Method and Limitations

• Mixed Method approach used for data collection
  • In-person interviews conducted with 26 Key STEM informants
  • Data collected on 126 STEM opportunities*
  • Variables examined include: Program Focus, Program Type, Purpose, # of Locations, Participation, Grades Served, Fees, Collaborating Partners
  • Key themes emerged from interviews and were supported by a review of current research by national STEM organizations and foundations

• Limitations
  • Does not represent every private and public sector program available to youth in Fairfax County
  • Does not focus solely on underserved populations
  • Focused on K through 12 opportunities, post-secondary STEM opportunities are beyond scope of this analysis
  • Only a limited number of programs that include an arts component or STEAM were identified and included

*For more detail on interview responses, consult the STEM Opportunities Data Collection spreadsheet
Overview of STEM Opportunities

• What is a STEM opportunity? For this Snapshot, an “opportunity” is defined as an event, an activity, a field trip, camp, after school program, robotics club or chance to be mentored; opportunities are diverse and varied

• Snapshot includes a cross-sector of organizations that provide STEM opportunity (government, nonprofit and school)

• Cross-sector organizations frequently work together to provide a single youth opportunity; a program may be offered by a nonprofit or school, but is supported by a corporation or foundation
  • Northrop Grumman sponsors Cyber Patriots for youth held each summer at FCPS high schools
  • The Community Foundation for Northern Virginia sponsors Girl Makers in Northern Virginia (5th-8th grade) through NOVA Labs
Overview of STEM Opportunities

- Majority of STEM opportunities are conducted during “out of school” time

- Majority are intended to provide “enrichment” and/or serve multiple purposes such as creating awareness, improving academic performance or preparing for careers

- Majority focus on addressing all four STEM components: science, technology, engineering and math as opposed to one component only (e.g. math enrichment)

- Majority are described “grade level” level appropriate
  - 12% described content as targeted to “advanced” or “on grade level/advanced” examples
    (Examples of advanced STEM opportunities: FCPS supports Science Olympiad, Leidos supports First Tech Challenge at Thomas Jefferson HS, MITRE supports Online Cyber competition at national Level)
Program Participation

• Snapshot found that programs vary in how they count participation (examples: visit, attendee, team member or student)

• Participation in STEM can vary widely for youth from a single exposure (e.g., 70,000 visits annually to Children’s Science Museum) to more intensive experiences as participants in robotics clubs, technology camps, or mentoring (<40 participants)

• A single youth could have multiple experiences and some youth can repeat experiences; data on “unique” users is not tracked

• FCPS continues to be the single greatest provider of STEM opportunity serving 166,844 Fairfax County students with both in-school and out-of-school STEM educational opportunities
Program Fees

• Snapshot revealed that a significant number of opportunities have no fees or out-of-pocket charges to families to participate (Neighborhood and Community Services Computer Clubhouses, Fairfax County Public Libraries and Fairfax County Public School Academies, FCPS STEM courses and certifications)

• However most STEM camps, including those offered through Fairfax County Parks, and private enrichment classes are fee-based ($250-$495)

• Initial participation in some competitive STEM programs (e.g., science fair or robotics clubs) may not require fees, but subsequent rounds can present significant out-of-pocket costs to families (e.g. registration fees, travel, equipment and time)

• Although robotics clubs frequently have corporate/foundation support, additional “fundraising” by participants/families is often required to ensure their success
Where are Programs Offered?

- Snapshot revealed hundreds of diverse STEM opportunities throughout Fairfax County making it difficult to develop a meaningful asset map.

- Many programs are open and draw from/serve the local community or neighborhood, the county and even the Northern Virginia region.

- One-third opportunities are typically offered at one location, but many are offered in multiple locations (3 or more locations).
All Students 7-12 Can Enroll in Elective STEM Courses

Enrollment in STEM Tracks 2015-16

• Business and IT, 9666
• Technology and Engineering, 8075
• Health and Medical Science, 938

Sample STEM Course Offerings in Middle and High School

• Introduction to Technology
• Engineering Design and Modeling
• Computer Solutions
• Digital input Technologies
• Design, Multimedia and Web Technologies
• Programming
• Architectural Drawing
• Electronics
• IB Design and Technology SKL
• STEM Advanced Electronics and Robotics
• STEM Advanced Engineering
• [http://www.fcps.edu/is/pos/index.shtml](http://www.fcps.edu/is/pos/index.shtml)
Career and Technical Education: High School Academies

- All junior and senior HS students can elect to participate in one of six FCPS academies
- No admission requirements and no fees to participate
- Academies offer advanced technical and specialized courses that integrate career and academic preparation for post-secondary education
  - Provide career experiences including shadowing, mentoring and internships with local business
  - Offer opportunities to obtain certification

- Potential barriers to participation: student schedules must accommodate travel to and from academies, space in some classes can be limited, some courses require successful completion of pre-requisites
Opportunities to Increase Student Enrollment in CTE/STEM curriculum

• Identify pathways and opportunities for students, parents, counselors, teachers and community to encourage pursuit of STEM education and certifications

• Focus on student’s FCPS Student Learning Plan, the gateway to student planning, http://www.fcps.edu/is/slp/

• Encourage greater use by students and their families of online planning tools to inform course selection and career development, i.e., Family Connection and Naviance

• Create greater awareness among school counselors about CTE courses and career opportunities

Source: FCPS Career and Technical Advisory Committee 2014-15 Annual Report
Opportunities to Increase FCPS Capacity to Provide STEM Opportunity

• Seek greater flexibility in teacher licensure, allowing multiple licenses to teach relevant course in STEM.

• Encourage legislative efforts with state elected officials and Department of Education to allow CTE courses to fulfill state HS graduation requirements where appropriate.

• Increase the list of state approved industry credentials permitted to satisfy the initial licensure requirements for CTE teachers to include recognized profession skill and workplace/military experience.

Source: FCPS Career and Technical Advisory Committee 2014-15 Annual Report