

Currently, there are eight Governor's Career and Technical Academies in Virginia. They are located in Arlington County, Halifax County, Loudoun County, The New Horizons Regional Center in Hampton City, The Pruden Center for Industry and Technology in Suffolk City, Russell County, Stafford County and Chesterfield County.

As required by the Board of Education, the State Council of Higher Education in Virginia (SCHEV) has reviewed the attached proposal and recommends that the Board approve the proposal. Staff at the Virginia Department of Education (DOE) have also reviewed the proposal in the context of the Board's criteria. An executive summary of the proposal is contained in Attachment A. Attachments B and C contain the reports from the reviews by SCHEV and the DOE. Attachment D contains the complete proposal.

Summary of Major Elements:

The focus of the Governor's Career and Technical Academy for STEM in Richmond is to offer Richmond City Public Schools' students a solid education in science, technology, engineering and mathematics along with the critical skills needed to succeed in a digital, global economy. Work force readiness opportunities and a rigorous academic and technical program of study in two career pathways (Engineering and Technology and Therapeutic Services) will prepare students for a full range of postsecondary opportunities (two- and four-year colleges), formal employment training, apprenticeships, and the military. The career pathway programs have been designed to lead students to opportunities in high-skill, high-wage, and high-demand employment areas.

Students in each pathway will participate in several middle school and summer program components to help prepare them for admission into the Academy's high school program. The Engineering and Technology Pathway will teach students the key elements and skills of engineering and technology-based careers by immersing them in rigorous engineering problems. The Therapeutic Services Pathway will focus on Sports Medicine and Emergency Medical Services. An Academy partnership with Virginia Commonwealth University (VCU) will enable students to shadow VCU sports trainers to learn how to care for and help athletes prevent injuries. Students will also participate in a variety of academic and extracurricular activities conducted by the School of Engineering at VCU and the School of Engineering, Science and Technology at Virginia State University. All students will have the opportunity to take dual enrollment courses from J. Sargeant Reynolds Community College and earn multiple licenses and certifications.

Superintendent's Recommendation:

The Superintendent of Public Instruction recommends that the Board of Education waive first review and approve the proposal to establish the Governor's Career and Technical Academy for STEM in Richmond.

Impact on Resources:

Funding must be provided at the local level.

Timetable for Further Review/Action:

The Governor's Career and Technical Academy for STEM in Richmond will be in operation for the beginning of the 2009-2010 academic year.

The Governor’s Career and Technical Academy for STEM in Richmond
Executive Summary
July 23, 2009

Partnership Members: Richmond City Public Schools; Virginia Commonwealth University; Virginia State University; J. Sargeant Reynolds Community College; James Madison University; Old Dominion University; Science Museum of Virginia; Timmons Group, Inc.; MathScience Innovation Center; U-Turn Sports Performance Academy; YMCA-North Richmond; Center for Educational Learning Technology (CELT); Dr. Gregory Pleasants-Parham Road Internal Medicine; Black Data Processing Associates; Jacqueline Johnson-Curl, D.D.S.; Quastar, LLC; Ronald A. Williams, LTD (electronic and technology resources); Virginia Sports Medicine & Physical Therapy; Richmond Area Program for Minorities in Engineering; Johnson Controls, Inc.; and ECPI College of Technology

Lead Entity: Richmond City Public Schools

Fiscal Agent: Richmond City Public Schools

Contact Person: Ms. Cozette G. McIntyre
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Academy Location: Governor’s Career and Technical Academy for STEM in Richmond
Richmond Technical Center
2020 Westwood Avenue
Richmond, Virginia 23230

Number Students: In year one, a total of forty-five slots will be allocated for rising eighth-grade student admission.
This will allow thirty students in the Engineering and Technology pathway and fifteen students in the Therapeutic Services pathway. Each year the Academy will add an additional forty-five students. The potential for enrollment is 180 students in year four.

Career Pathways: Engineering and Technology
Therapeutic Services

Academy Goals and Description: The major goal of the Academy is to raise student aspirations and attract more students to postsecondary education in preparation for technical careers, especially targeting students who might otherwise have settled for a curriculum that did not prepare them well for postsecondary education or work.

Partnerships and collaborations will provide a program that will support and engage students in a variety of middle school, pre-Academy and summer experiences designed to help them to achieve in a rigorous high school component.

**Highlights
of the
Program:**

An Academy “community of learners” will be established through collaboration with partners in higher education, nonprofit organizations, and businesses. Students within the district will have the opportunity to master core academic courses from any high school and also attend the Academy.

Additional highlights of the program are:

- Rigorous, hands-on and project-based coursework;
- Cross-disciplinary, hands-on professional development for teachers;
- Academic support during the summer and academic year including interactive seminars covering communication, organization, negotiation, and decision-making skills;
- Work force readiness opportunities;
- Career and college development activities for students beginning in eighth grade to include personalized Academic and Career Plans, college tours, and exposure to college students and professionals; and
- Parent and community involvement recruited through a variety of forums to present information and collect feedback.

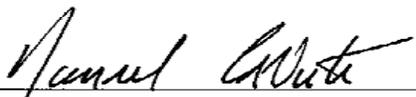
**The State Council of Higher Education for
Virginia**

**Review of Governor's Career and Technical
Academy Proposal**

Name of Lead Entity on Proposal: Richmond Public Schools

Date of Review: June 18, 2009

The State Council of Higher Education for Virginia recommends approval of the Governor's Career and Technical Education Academy for STEM in Richmond as a Governor's Career and Technical Academy.



Dr. Daniel LaVista
Executive Director
State Council for Higher Education

6-17-09

Date

**State Council of Higher Education for Virginia
Governor's Career and Technical Academies
Postsecondary Curriculum Review Checklist**

Academy Name	Collaborating Partners	Total Funds Requested	Allocated Funds for Postsecondary Component
Governor's Career and Technical Academy for STEM in Richmond	Richmond Public Schools, VCU, JSRCC, (Others—see proposal)	None	NA

Criteria

Category 1: Postsecondary Accreditation and Approvals

YES/NO

- YES** Postsecondary institution is appropriately accredited
- NA** Proposed postsecondary program has specialized accreditation, if applicable
- YES** Proposed postsecondary program is SCHEV and/or VCCS approved
- NO** Proposed postsecondary program will be seeking SCHEV and /or VCCS approval

Category 2: Governor’s Career and Technical Academy Requirements

YES/NO

- YES Evidence of a partnership with a postsecondary institution, business, or industry, and demonstrated roles for each entity**
- YES Offers at least one career pathway in a field identified by a statewide authority or organization as a strategic growth area for Virginia**
- YES Offers at least one career pathway addressing regional and local work force demand in a high-wage, high skill field identified by employers and work force officials**
- YES At least one of the two career pathways is in a STEM-related field**

Category 3: Postsecondary/Business Component Requirements

YES/NO

- YES Provides opportunities for students to earn industry credentials or state licensure, associate or baccalaureate degrees, and college credit for work-based experiences**
- YES Articulates with baccalaureate programs or to higher levels of training or professional credentialing**
- YES Demonstrates P-16 integration including curriculum development with high school, college, and university faculty (desired)**
Includes college faculty as adjunct faculty of the academy (desired)
- YES Provides opportunities for students to participate in work-based experiences**

Category 4: Academic Quality

YES/NO

- YES Requires appropriate postsecondary faculty qualifications**
- YES Requires faculty to hold industry certification, where necessary**
- YES Planned professional development for faculty and administrators**
- YES Planned systematic program and learning outcomes assessment**

Category 5: Administration and Funding

YES/NO

YES Funding is sufficient to support effective administrative and operational needs including materials, administrative personnel, and facilities

YES Funding is sufficient to sustain faculty salaries, curriculum development costs, and instructional materials and delivery

YES Facilities possess the necessary physical attributes to deliver the instructional program (classroom space, technology, labs, equipment)

COMMENTS

The proposed program is comprehensive and integrated, meeting the criteria outlined by SCHEV. It is well written and has an effective plan for the efficient utilization of resources.

**Virginia Department of Education
Governor's Career and Technical Academy
Proposal Review Checklist**

Final Review

Title of Proposal: The Governor's Career and Technical Academy
for STEM in Richmond

Lead Entity for Proposal: Richmond City Public Schools

Date of Review: June 5, 2009

**Virginia Department of Education
Governor's Career and Technical Academy
Proposal Review Checklist**

I. Partnership Capacity

Partnerships desiring to implement a Governor's Career and Technical Academy shall provide the Department of Education with evidence of the following:

Criteria	Documentation			Comments
	Full	Partial	None	
A. An active, ongoing planning committee, including a list of members and signed certifications from each that they are willing and able to serve in that capacity. At a minimum, members must represent K-12 education (superintendent or designee), higher education, and business and industry. All partners must be represented on the committee.	X	X		3/17/09 A few signatures were missing from the planning committee. 6/5/09 All signatures are included.
B. An Advisory Board, including a list of members and signed certifications from each that they are willing and able to serve in that capacity.	X	X		3/17/09 A few signatures were missing from the Advisory Board. 6/5/09 All business partners are represented on the Advisory Board.
C. A written memorandum of agreement among school divisions, local businesses, postsecondary institutions, and any other partners that outlines ways in which community resources will contribute to the Governor's Career and Technical Academy to broaden the scope of students' educational experiences.	X	X		3/17/09 A few business partner signatures were missing. 6/5/09 All signatures are included.

Criteria	Documentation			Comments
	Full	Partial	None	
D. A statement of assurances that the Governor's Career and Technical Academy Planning Committee has reviewed provisions of <i>Administrative Procedures Guide for the Establishment of Governor's Career and Technical Academies</i> and agrees to follow the guidelines set forth in the document (see appendix).	X			
E. A statement of assurances that, if				

Criteria	Documentation			Comments
	Full	Partial	None	
applicable, an ongoing Governing Board will be established to reflect current Board of Education regulations relative to jointly operated schools and programs.				Not applicable.
Comments: 3/17/09 The review committee suggested a few more partners could be used to support the engineering pathway. 6/5/09 Richmond City Public Schools has included additional partners in each pathway.				

II. Need/Rationale for the Academy

Partnerships desiring to implement a Governor’s Career and Technical Academy shall provide the Department of Education with evidence of the following:

Criteria	Documentation			Comments
	Full	Partial	None	
A. Demonstration of the need/rationale for the Academy. This statement should be concise and state the major reasons to have a Governor’s Career and Technical Academy, including need at the state, local and/or regional levels.	X			Need is well documented.
B. A description of the enhanced or additional offerings in science, technology, engineering, and/or mathematics (STEM) that will meet the need described above.	X			
C. A fiscal agent that is a public entity, including a certification that the entity is willing and able to serve in that capacity.	X			
Comments:				

III. Program Description

Each Governor’s Career and Technical Academy planning committee shall develop cooperatively with local school divisions, business, community, and higher education partners and have available for review and dissemination, a program description that includes:

A. A statement of program goals addressing the following criteria:

Criteria	Documentation			Comments
	Full	Partial	None	
1. Rigorous academic content in career and technical instruction;	X			
2. An emphasis on STEM career pathways;	X			
3. Individualized high school plans to ensure course selections that are aligned with students’ transition and career goals after high school;	X			
4. Evidence that graduates will complete a college and work readiness curriculum, minimally at the level specified for Commonwealth Scholars Course of Study (State Scholars Core) with the possibility of pre-approved substitution of equivalent courses where there may be more relevant course selections for a particular career pathway;	X	X		3/17/09 The Commonwealth Scholars Course of Study requirements are only partially fulfilled at this time. 6/5/09 The Commonwealth Scholars Course of Study requirements are met.
5. Evidence that graduates will qualify for the Technical and/or the Advanced Technical Diplomas; and	X			
6. Incorporation of Virginia’s Workplace Readiness Skills.	X			
Comments:				

A statement of program objectives and performance measures to:

Criteria	Documentation			Comments
	Full	Partial	None	
1. Improve academic achievement of Academy students;	X			
2. Increase completion of dual enrollment courses;	X			
3. Provide workplace readiness experiences for students through strong partnerships with businesses;	X			
4. Increase high school graduation rates;	X			
5. Reduce dropout rates;	X			
6. Increase enrollment and retention in postsecondary education;	X			
7. Increase the proportion of students completing a college and work place ready curriculum in high school;	X			
8. Reduce the proportion of students requiring remediation in college;	X			
9. Increase the number of industry certifications awarded to high school students; and	X			
10. Increase the number of graduates employed in high-wage, high-demand and high-skill careers.	X			
<p>Comments: 3/17/09 All program objectives need to identify baseline data collection. 6/5/09 Baseline objectives have been identified.</p>				

B. A brief description of the proposed program, including:

Criteria	Documentation			Comments
	Full	Partial	None	
1. Site location;	X			
2. Number of students to be served;	X			
3. Grade levels;	X			
4. General curriculum design;	X			
5. List of courses to be delivered;	X			
6. Description of how/where the courses will be delivered. Courses may be delivered on a high school, technical center or community college campus, online, or in other innovative ways; and	X			
7. Designation of full-day or part-day, academic-year program.	X			
Comments:				

B. Evidence of participation in the Governor’s Exemplary Standards Award Program for Career and Technical Education

	Documentation			Comments
	Full	Partial	None	
	X			
Comments: Statement of intent is included.				

C. Program and course descriptions

E.1. At least two well-articulated career pathways must be included that meet the following criteria:

Criteria	Documentation			Comments
	Full	Partial	None	
Pathway #1: Engineering				
a. Must include opportunities to earn industry credentials, postsecondary certificates, diplomas or associate degrees while in high school and pursue additional industry credentials and academic degrees at the associate, bachelor's and graduate levels. These pathways may be in the same or different career clusters.	X			
b. Must be in a field identified by a statewide authority or organization, such as the Virginia Economic Development Partnership or the Virginia Research and Technology Advisory Commission, as a strategic growth area for Virginia. Examples include biosciences, information technology, automotive technology and motor sports, as well as modeling and simulation and nanotechnology or	X			
c. Must address regional and local work force demand in a high-wage, high-skill field as identified by employers and work force officials.				Fulfilled statewide requirement
d. At least one pathway must be in a STEM-related field. This career pathway should drive the innovative capacity of the region and/or state.	X			
Comments:				

Criteria	Documentation			Comments
	Full	Partial	None	
Pathway #2: Therapeutic Services				
a. Each career pathway must include opportunities to earn industry credentials, postsecondary certificates, diplomas or associate degrees while in high school and pursue additional industry credentials and academic degrees at the associate, bachelor's and graduate levels. These pathways may be in the same or different career clusters.	X			
b. Must be in a field identified by a statewide authority or organization, such as the Virginia Economic Development Partnership or the Virginia Research and Technology Advisory Commission, as a strategic growth area for Virginia. Examples include biosciences, information technology, automotive technology and motor sports, as well as modeling and simulation and nanotechnology, <u>or</u>	X			
c. Must address regional and local work force demand in a high-wage, high-skill field as identified by employers and work force officials.				This pathway addresses a statewide need.
d. Of the two pathways described, at least one must be in a STEM-related field. This career pathway should drive the innovative capacity of the region and/or the state.	X			The engineering pathway fulfills this requirement.

Criteria	Documentation			Comments
	Full	Partial	None	
e. Additional career pathways may address one of the areas described above, or an area identified by the partnership as an area of interest, growth, or expansion for students in the service area of the Academy.				Not applicable.
Comments: The Therapeutic Services pathway is quite exciting as the focus of this pathway is sports medicine. This is a first for the Academies and offers exciting opportunities for internships for the students.				

E.2 List of all requirements for successful program completion.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

E.3 Academy graduates must achieve one or more of the following benchmarks:

Criteria	Documentation			Comments
	Full	Partial	None	
a. Earn one or more industry certifications or state occupational licenses, and/or demonstrate competencies on an assessment instrument recognized by postsecondary institutions such as CLEP examinations, collaboratively designed or mutually approved end-of-course tests, college placement tests, or student portfolios reviewed by a team of college and high school faculty; or	X			
b. Earn at least 9 transferable college credits as defined in the Early College Scholars program (includes dual enrollment, AP and other options); or	X			This is an option in the Therapeutic Services pathway.
c. Earn an Associate Degree.			X	Not required.

Criteria	Documentation			Comments
	Full	Partial	None	
Comments:				

E.4 Significant work-based experience must be included representing additional instruction or training beyond the classroom such as:

Criteria	Documentation			Comments
	Full	Partial	None	
a. Cooperative Education; or	X			
b. Internships; or	X			
c. Job Shadowing; or	X			
d. Mentorships; or	X			
e. Project-based learning; or	X			
f. Service learning; or				
g. A combination of the above.				
Comments: One internship opportunity describes students shadowing sports trainers on the field during VCU football games to observe procedures directly.				

C. Length of program and daily schedule: Governor’s Career and Technical Academies are defined by program content, not by the location or delivery system of courses. Evidence of the following must be submitted:

Criteria	Documentation			Comments
	Full	Partial	None	
Designation of full-day or part-day, academic-year program.	X			
Comments:				

D. Assurance from the fiscal agent that operating funds and facilities are available to support the Governor’s Career and Technical Academy and are adequate to meet the needs of the program

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

E. Materials and equipment to be provided to accomplish program goals and objectives.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments: Perkins funds will be used.				

F. Evidence of an internal evaluation process to effect program improvement, including:

Criteria	Documentation			Comments
	Full	Partial	None	
1. A review of the Academy’s policies, procedures, and outcomes;	X			RCPS has an internal review mechanism that will be used.
2. A review of the program design and instructional delivery;	X			
3. Consideration of feedback from students, staff, parents, the community, and partnership members; and	X			
4. Annual collection and reporting of data to the Department of Education related to student achievement, goal achievement, and other indicators.	X			
Comments:				

IV. Administrative Procedures

Each Governor’s Career and Technical Academy must develop and maintain procedures developed cooperatively with participating partners. There should be evidence of procedures in the four areas that follow.

A. Partnerships - The role of business and industry, public school divisions, and postsecondary institutions in the partnership. The role of work force and economic development entities should also be included if they are among the partners.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

B. Student recruitment, selection criteria, and admissions.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments: The student application and teacher scoring rubric are both included in the appendices.				

C. Code of student conduct and attendance.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

D. Transportation provided by the school division or consortium that is in compliance with all applicable federal and state regulations.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

E. Staff recruitment, selection, and assignment - The Governor’s Career and Technical Academy shall hire staff members who meet the Virginia teacher licensure requirements and/or postsecondary faculty qualifications. Where applicable, they must have industry-specific education with training and experience, including industry certification.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

F. Staff development - The program will provide appropriate staff training in addition to staff planning time.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

G. Staff evaluation – Staff will be evaluated according to the human resources policies of the agency or institution employing Academy personnel.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

H. Parent, student and community involvement

Criteria	Documentation			Comments
	Full	Partial	None	
1. Preparation for entering the Academies should begin by eighth grade.	X			Many summer programs for middle school students, both existing and newly created, will be used to prepare students.
2. Students, parents, teachers, and counselors should work collaboratively to:	X			
a. Complete career interest inventories;				
b. Prepare academic and career plans outlining an intended course of study in high school;	X			
c. Review multiple postsecondary pathways and the steps required to pursue them;	X			
d. Participate in career assessments to identify areas students should strengthen to qualify for their selected pathways; and	X			Several tools were mentioned including Virginia Wizard.
e. Discuss available diplomas, seals, and other recognitions including admission to specialized programs such as Governor’s Academies.	X			

I. Documentation of insurance, budget, and other fiscal information

	Documentation			Comments
	Full	Partial	None	
Insurance	X			
Budget (from appendix)	X			
Budget Narrative	X			
Other				
Comments:				

The Governor's Career and Technical Academy for STEM in Richmond

**Proposal Submitted to
The Virginia Department of Education
By
Richmond City Public Schools
July 23, 2009**

**Governor’s Career and Technical Academy for STEM in Richmond
Richmond City Public Schools**

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Governor's Career and Technical Academy for STEM in Richmond Richmond City Public Schools

Introduction

The focus of the Governor's Career and Technical Academy for STEM in Richmond is to offer Richmond City Public Schools' (RCPS) students a solid education in science, technology, engineering and mathematics (STEM) along with the critical skills needed to succeed in a digital, global economy. A rigorous academic and technical program of study in two career pathways (Engineering and Technology and Therapeutic Services) will prepare students for a full range of postsecondary opportunities, formal employment training, apprenticeships, and the military. The career pathway programs have been designed to lead students to opportunities in high-skill, high-wage, and high-demand employment areas.

Currently RCPS has career and technical education pathways in place. However, this Academy will raise the standards by moving the Engineering and Technology and the Therapeutic Services Pathways to four-year programs from one-, two- and three-year completion programs. In addition, new courses are being added to both pathways and Project Lead The Way will be introduced to the Engineering and Technology Pathway.

Academy coursework, professional development for teachers, academic support for students, career, and college development activities along with parent and community involvement are designed to create a sustainable, STEM community of learners.

Students in each pathway will participate in middle school and summer program components to prepare them to enter the Academy and excel in the high school program.

The Engineering and Technology Pathway will teach students the key elements and skills of engineering and technology-based careers by immersing them in rigorous engineering problems. The Therapeutic Services Pathway will focus on Sports Medicine and Emergency Medical Services.

The Academy and its programs are the result of collaboration across RCPS content areas and strong partnerships with area businesses, the MathScience Innovation Center, the Science Museum of Virginia, and J. Sargeant Reynolds Community College.

Rationale/Need

Richmond is the capital of Virginia and serves as the cultural, financial, and business center of a rapidly growing metropolitan area. Richmond is considered one of the nation's preferred locations for corporate headquarters. Many local companies native to Richmond have regional, national and global markets. In 2008, *Forbes Magazine* placed Virginia first in the nation as the best site for business for the third year in a row. Forbes' index is based on a combination of business climate, labor, regulatory environment, economic climate, growth prospects, and quality of life.

The challenge for RCPS and Academy partners is to ensure that all students have the opportunity to share in, and are not excluded from, the strong, thriving, metropolitan economy. The Governor's Career and Technical Academy for STEM in Richmond is dedicated to reversing the trend of what has been depicted as a national tragedy—the underachievement and isolation of a growing low-income population.

In 2003, RCPS began making significant strides in raising student state mandated test scores and has increased the number of formerly low-performing schools to schools that are now fully accredited. In 2008, for the third consecutive year, every RCPS high school was fully accredited. The percentage of schools earning full accreditation reached a record high of 87.5 percent meeting the Standards of Learning (SOL) benchmark scores in English, mathematics, history and science. Two additional schools were granted conditional accreditation, which increases the district's accreditation rate to 91.7 percent. These accomplishments can be attributed to committed leadership, dedicated teachers and a host of initiatives and endeavors that include a concentrated instructional program in middle school mathematics and a newly implemented reading program on the secondary level featuring both remediation and content area strategies.

Establishment of the Academy is one of the commitments that RCPS has made to better serve the needs of students and their families, many of whom are part of a phenomenon known as the cycle of poverty. In the cycle, generations of a family remain economically poor. Lack of education is one of the critical factors perpetuating the cycle. Seventy-four percent of RCPS students qualify for free and reduced lunch, representing the second highest percentage in Virginia where the average is 33.32 percent. United States census data (2000) indicate that 48 percent of Richmond households are in the \$0-\$29,999 income category compared to 18 percent in neighboring Chesterfield County and 25 percent in Henrico County. Thirty-two percent of the

total city population is under the age of 18 and 52 percent are female heads of households with children under the age of five.

The Academy is designed to meet the work force needs of emerging and existing businesses and industries in Virginia. The Academy's program will help students develop "21st Century skills in the context of rigorous, content-based, academic study. Teachers will engage students in authentic, intellectually stimulating and challenging work that motivates them to work hard, collaborate in meaningful ways, build a variety of skills, and conduct research to accomplish their goals." (Literacy in the Digital Age, the North Central Regional Educational Laboratory and the Metiri Group, 2003)

Engineering and Technology Pathway

Engineering and Technology is a STEM pathway that will provide students with a variety of employment options and postsecondary opportunities. In 2007, the Virginia Office of the Secretary of Technology reported that there was an impending technology boom. "Tech jobs, wages, and exports are all on the rise...if these trends continue, next year Virginia will become the state with the highest concentration of tech workers in the nation." "Engineers are needed to design and build new systems while Engineering Technologists will design and build new components." (Greg Poersch, AeA Cyberstates 2006 Report)

The U.S. Bureau of Labor Statistics has projected a need for 160,000 more engineering positions over the ten-year period between 2006 and 2016. This 11 percent increase does not include the replacement of many retiring engineers. It is predicted that more than half of the country's engineers are nearing retirement. The need for environmental engineers in Virginia in 2012 is 2,402, a 49.56 percent change requiring 273 replacements and 796 openings due to growth. (Virginia Workforce Council, Workforce Development Blueprint, 2002, "Specific Occupations with the Largest Percent Increase in Employment, 2002-2012)

The Virginia Workforce Commission reports that growth plus replacement needs for engineers are estimated to average about 193 openings per year from 2004-2014. Of these estimated 193 openings per year, 54.9 percent are due to growth (new positions) and 45.1 percent are due to the replacements of workers leaving the occupation. This compares with all occupations in Virginia statewide where 42.9 percent of annual openings are due to growth and 57.1 percent of annual openings are due to the replacement of workers leaving these occupations. The employment of

engineers is expected to grow about as fast as the average for all occupations over the next decade, but growth will vary by specialty. Environmental engineers should experience the fastest growth, while civil engineers should see the largest employment increase.

Long-Term Occupational Employment Projections-Engineering				
Source: Virginia Workforce Connection; Projections Team/Micro Matrix System (2002)				
Occupation	2014 Projected Employment	Total Annual Average Openings	Annual Average Openings due to Growth	Annual Average Openings due to Replacement
Civil Engineering Technicians	2,906	99	48	51
Electronics Engineers (except computers)	7,767	276	153	123
Mechanical Engineers	8,118	311	122	189
Industrial Engineers	4,572	171	80	91

National earnings reported in May 2006, by the U.S. Bureau of Labor Statistics are shown in the following tabulations:

Engineering Technicians	
Aerospace engineering and operations technicians	\$53,300
Electrical and electronic engineering technicians	\$50,660
Industrial engineering technicians	\$46,810
Mechanical engineering technicians	\$45,850
Electro-mechanical technicians	\$44,720
Civil engineering technicians	\$40,560
Environmental engineering technicians	\$40,560

Civil Engineering Technicians	
Local government	\$45,800
Architectural services	\$42,310
Engineering services	\$41,180
State government	\$35,870
Testing laboratories	\$31,800

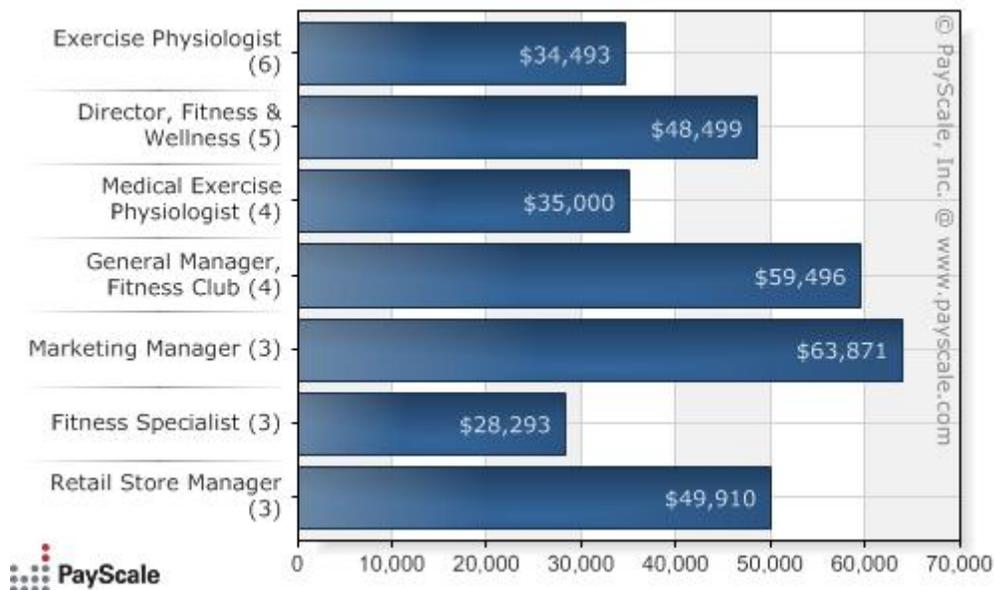
Therapeutic Services Pathway

The focus of the Therapeutic Services Pathway is providing instruction to prepare students to enter the fields of sports medicine and emergency medical services. Sports medicine is a broad, emerging field comprising the sciences related to the care, treatment and prevention of sports-related injuries. The completion of courses in emergency medical services is a requirement for studies in sports medicine and exercise science at four-year institutions. The exercise science concentration prepares students to serve in a variety of fitness, health and conditioning programs in corporate, commercial, university and clinical settings. Career paths include research, exercise physiology, corporate fitness, cardiopulmonary rehabilitation, strengthening and conditioning, and wellness.

The U.S. Department of Labor predicts that eight of the twenty careers with the highest demand for employees in the next decade will be in the health care sector. Nearly 80 million Americans born between 1946 and 1964 are living longer. This population is expected to place a demand on the services of physical therapy, exercise, nutrition and wellness professionals.

Employment as personal fitness trainers, nutrition and fitness specialists or health club instructors are options for Academy students after high school and during their pursuit of a two-year degree. According to information compiled by the U.S. Bureau of Labor Statistics, personal trainers and exercise instructors generally earn a salary of \$25,470 per year.

Median Salary by Job - Degree: Exercise Physiology (United States)



Occupations for exercise scientists include teachers, designers of exercise and rehabilitation plans, and nutrition, exercise and health researchers. A bachelor's or master's degree in Exercise Physiology or a related field is required. U.S. Bureau of Labor Statistics expects overall employment for exercise scientists to grow by almost 30 percent between the years 2006 and 2016. The greatest number of positions will be in physical therapy, personal training and exercise physiology.

In 2006, the median salary for all exercise scientists was around \$66,000 a year. Research scientists may earn salaries of over \$90,000 a year depending on their academic qualifications.

Median Salary by Employer Type - Degree: Exercise Physiology (United States)



Exercise physiologists assess a client's overall physiological health using medical records, tests and observations. The information is then used to create a therapeutic program to improve the client's overall health and well-being. Most entry-level physiologists must have a bachelor's degree in exercise science or a related field. The employment outlook for physiologists, reported by the U.S. Bureau of Labor Statistics, predicts growth in nursing care facilities and outpatient facilities that cater to the disabled to grow faster. The median annual salary for physiologists is \$34,990.

Certified Athletic Trainers (CAT) are medical experts in preventing, recognizing, managing and rehabilitating injuries that result from physical activity. These trainers can help athletes avoid unnecessary medical treatment and disruption of normal daily life. In cooperation with physicians and other allied health personnel, the athletic trainer functions as a vital member of athletic health-care teams in secondary schools, colleges, universities, sports medicine clinics, professional sports programs and other health care settings. Salaries in this field vary widely depending upon the level of education, employment setting, and experience. According to the 2005 National Athletic Trainer's Association salary survey, average salaries for CATs ranged from \$28,495- \$63,568.

Specific Occupations with Largest Percent Increases in Employment, Virginia, 2002-2012 Source: Virginia Workforce Council, Work force Development Blueprint 2020						
Occupational Title	Employment Est. 2002	Employment Proj. 2012	Percent Change	Openings Replacements	Openings Growth	Openings Total
Physical Therapists Aides	916	1,456	58.95 %	153	540	693
Physical Therapists Assistants	1,229	1,918	56.06 %	205	689	894
Fitness Trainers and Aerobics Instructors	5,196	7,880	51.66 %	1,192	2,684	3,876
Physical Therapists	2,987	4,303	44.06 %	294	1,316	1,610

Foundation for Implementation

Richmond City Public Schools (RCPS) and Richmond Technical Center (RTC) staff toured established academies in Virginia to prepare for planning and implementing the Governor’s Career and Technical Academy for STEM in Richmond.

This RCPS/RTC Planning Team played an integral role in the planning and development of the Academy. See Appendix A for a list of team members. The team attended the Virginia Department of Education’s “From Vision to Practice Conference: Growing SySTEMic Literacy Across the Content Areas” in 2008 in Richmond, Virginia. The conference served as a stimulus for gaining RCPS broad-based support and collaboration across the content areas. The team met with potential partners, helped to develop student selection criteria, and reviewed curriculum resulting in course alignment and course sequences through dual enrollment and Advanced Placement.

The team also reviewed the success and effectiveness of like-minded programs within the RCPS district such as Open High School, Richmond Community High School and Franklin Military Academy. Open High School is a fully accredited alternative high school that offers smaller classes,

a more informal experience and a broader range of curriculum offerings. The school's name and founding principles are based on the belief that valid learning experiences can, and do, occur outside of the traditional classroom setting. The entire community with all its human and material resources should be made into a learning laboratory. Courses are held on-site and at selected locations in the metropolitan area. Richmond Community High School provides an accelerated, college preparatory curriculum for students from low economic backgrounds who show strong promise for academic excellence. The curriculum at Community is distinguished by an in-depth focus on high-level thinking and problem solving skills. The Richmond Community and Open High Schools were ranked in 2008 among the nation's "best" schools by U.S. News and World Report magazine and School Evaluation Services, a K-12 education data research and analysis business operated by Standard and Poor's. Franklin Military Academy is an alternative high school created to offer a structured environment of academics, military and public safety training. It is a special initiative that provides high school learning centers for students who are strongly motivated and wish to have a distinctive educational experience in a small school environment of focused learning, guided by a team of mentor teachers, military and public safety partners, as well as an education-to-careers curriculum.

Consultations with RCPS principals and school counselors were held during the planning phase. Both groups have expressed enthusiasm and support for recommending students for participation in the Academy.

The Governor's Career and Technical Academy for STEM in Richmond will build upon the various experiences of RCPS students and teachers by creating opportunities to expand options to acquire STEM literacy and other critical knowledge, skills and credentials that will prepare them for high-demand, high-wage and high-skill careers.

RCPS students participate in a variety of programs focused on providing exposure to science, technology, engineering and mathematics. Since 2005, Altria and the University of Richmond have sponsored the "Math and Science Investigators" (MSI) program. MSI has provided a rigorous academic achievement program for one hundred rising eighth- and ninth-grade students for five weeks during the summer. These students participate in career exploration, field trips and mentoring during the academic year and the summer. Course offerings include: Earth Science, Biology, Chemistry, Algebra I and II, Geometry, Research I and II, Content Literacy I, II and III and Independent Research.

Approximately one hundred ninth-grade students from four RCPS schools participated in a Johns Hopkins Mathematics Program in the summer of 2008 and will participate in the summer of 2009. The goal of the program is to help students pass Algebra I.

In 2008, ten students in grades 4-6 from George Mason Elementary School participated in a Summer Enrichment Day Camp conducted by Virginia Commonwealth University (VCU) Medical Center's Division of Health Careers/Education and Special Services for Students. The program is also a partnership with the Science Museum of Virginia's Outreach Department and receives funding support from the Howard Hughes Medical Institute. The four-week program consist of hands-on workshops, field trips, daily mathematics and reading tutorials, swimming, art and other activities focused on science and health. The program will be offered again in the summer of 2009.

RCPS students in grades 6-8 have participated in the National Science Foundation (NSF)-Advanced Technological Education Program/J. Sargeant Reynolds Community College (JSRCC) "Pathways to Teaching" middle school camp since 2006. The program was funded by a NSF grant and is now sponsored by JSRCC. This summer enrichment program consists of three classes that provide students with information on teaching careers in mathematics, science and technology education. The curriculum is participatory and allows students to experience learning about careers through an applied approach.

In addition to STEM-related programs, all ninth-grade RCPS students participate in a year-long freshman seminar course. This Johns Hopkins University course is focused on equipping entering freshmen with multiple tools for success and achievement in high school. The curriculum stresses social skills, human relations, team building and cooperative learning. The Holland Inventory Six Personality/Career Types is also administered.

The success of these programs has created an eligible pool of potential Academy students. Many are prepared for the challenges of rigorous studies and others are motivated and have a keen interest in pursuing STEM-related careers. Parents of these students also have an expectation that the investment of student time and energy in these extracurricular activities will distinguish and prepare them for opportunities in higher education and high-wage employment. All of these opportunities for students help establish a strong foundation on which to develop the Governor's Career and Technical Academy for STEM in Richmond. Appendix B provides a timeline for activities that support the Academy.

Partner Capacity

Throughout the years, Richmond City Public Schools (RCPS), J. Sargeant Reynolds Community College (JSRCC), Virginia Commonwealth University (VCU), Virginia State University (VSU), the Science Museum of Virginia (SMV) and the MathScience Innovation Center (MSIC) have collaborated in distinct and significant ways. These collaborations have included the development of student science and mathematics projects, course development, and professional development for teachers.

Both VSU and RCPS are charged with public missions to provide access, serve and educate a general population of students who choose to enter their institutions. This public mission includes a RCPS commitment “to move from competence to excellence” and VSU’s mission to “elevate our standing within the Commonwealth of Virginia and the nation, in our effort to ensure the quality education all citizens deserve and seek.”

VSU’s School of Engineering, Science and Technology is committed to providing a dynamic and stimulating learning environment where a combination of classroom instruction and laboratory work prepares students for the global nature of the engineering, science and mathematics professions. The School houses undergraduate programs in:

- Computer Engineering;
- Manufacturing Engineering;
- Electronics Engineering;
- Mechanical Engineering; and
- Industrial and Logistical Engineering.

These programs educate students to become professionals able to adapt to societal change, to communicate effectively and to be highly trainable. Students benefit from a curriculum that features in-depth major courses and substantial training in mathematics, physical sciences, social sciences and the humanities.

VSU will serve as an Academy partner by providing engineering and technology professional development for teachers. VSU will also sponsor school year and summer programs for students. Plans are underway to offer Engineering and Technology academy students a two-credit course in the VSU Engineering Technology program.

Another partner, Richmond Area Program for Minorities in Engineering (RAPME) is a local nonprofit organization, officially incorporated in July 1978, with ten industry sponsors and

a goal to achieve greater diversity in science and engineering. RAPME was formed to encourage minority middle and high school students to consider science and engineering as a profession. This mission aligned with the national effort to alleviate the underrepresentation of minorities in all engineering professions. RAPME is an exemplary program of collaborative efforts that brings together three partner institutions: Virginia State University, Virginia Commonwealth University, and J. Sargeant Reynolds Community College. They share the passion, experience, and knowledge to set strategic directions to establish, sustain, and improve the RAPME feeder system across the science and engineering disciplines. RAPME will reserve fifteen openings in its summer institute for eligible Academy Engineering and Technology pathway students in grades 8-12.

The MathScience Innovation Center is a forty-two-year-old nonprofit organization dedicated to futuristic mathematics and science education for K-12 teachers and students. Formed in 1966 as the Mathematics and Science Center, the organization was recently renamed as part of its expanded leadership role, including trend analysis, professional development of educators, innovative student programs and advocacy of futuristic programs. Its *2015 Vision* focuses on implementing new programs in engineering, fractal geometry, nanotechnology, environmental modeling and distance learning. According to Dr. Julia Cothron, Executive Director of the MathScience Innovation Center, “There is a global talent war; for the United States to compete, engineering must be further incorporated into the sciences.”

The MathScience Innovation Center will work as an Academy partner to provide professional development for teachers and hands-on activities for students. Plans are underway to develop a three-day workshop on vertical team teaching and a two-week summer camp experience for students.

The Science Museum of Virginia (SMV) is a long-standing partner and training provider for RCPS. The Museum is a premier center for hands-on science education and is a one-stop resource center for K-12 science teachers, designed to enrich the quality of science education. The RCPS-SMV partnership has initiated a variety of programs supporting teachers, students and their parents. Extensive professional development for teachers has helped to increase student achievement. The partnership’s Standards of Learning (SOL) Enrichment program began as a program specifically created to address the needs of students and elementary school teachers in RCPS.

SMV's programs, hands-on activities, laboratories, teacher resources, and summer camp experiences will be infused into the Academy's summer and school year program. The SMV will collaborate with the VCU School of Education to provide workshops in Therapeutic Exercise and Engineering for Alternative Energy for core academic teachers and Academy instructors.

The VCU School of Engineering and the Department of Health and Human Performance (HHP) share a commitment to admitting more Richmond area students into their programs. Pre-Academy and Academy students in the Therapeutic Services Pathway will participate in a variety of VCU Health Careers pipeline programs. The primary goal of these programs is to offer minority and disadvantaged students assistance in planning careers in health care throughout their middle, high school, undergraduate and professional years. Students will also visit the Department's Exercise Physiology Laboratory and the Sports Medicine Research Laboratory.

The VCU Department of Health and Human Performance will also provide job-shadowing opportunities for Therapeutic Services Pathway students. All pathway students will have the opportunity to shadow VCU sports trainers. These trainers are contracted by RCPS to provide athletic services for RCPS sports teams at five high schools. During these experiences, students will learn how to care for and help athletes prevent injuries that occur during practices and competitions. Students will also have the opportunity to shadow VCU sports trainers during VCU athletic events.

The VCU Engineering Department will provide activities during the academic year for students in grades 8-12 including a full-day information workshop with sessions on completing college applications, interview skills, etc. Also provided are workshops offered by the National Society of Black Engineers (NSBE) and VCU engineering alumni. They will also sponsor a recognition ceremony for the Academy's Engineering and Technology students upon completion of the twelfth grade.

Academy partners, U-Turn Sports Performance Academy, Timmons Group, Jacqueline Johnson-Curl, D.D.S., Black Data Processing Associates, Quastar, LLC, ECPI College of Technology, and Ronald A. Williams, LTD, will participate in career fairs, provide job-shadowing experiences and offer tours of their facilities for students.

These partners have been consulted during the planning stages of the Academy and will also serve as members of the Advisory Board. See Appendix C for a listing of Planning Committee Members and Appendix D for a listing of Advisory Board Members and the Memoranda of Agreement.

Articulation Agreements

In 2007, the Academy Planning Committee began developing activities in collaboration with the Richmond Technical Center's (RTC) principal, career coordinator, teachers of engineering and health-related courses, and grants management staff. This initial committee expanded to include sports medicine staff from VCU, a physical therapist and owner of a physical therapy business, a representative of the RTC/CTE Advisory Council, an engineer and owner of an engineering firm, RCPS director of instruction, and RCPS instructional specialists for science, mathematics, technology/trade and industry education, health/medical science, marketing education, health and physical education, history, career and technical education and guidance.

Initial commitment forms, entitled "Memorandum of Agreement", "Partner Identification Form" and "Planning Committee Agreement", have all been re-titled as the development of the Academy has continued. Ultimately, all persons have committed to sharing their knowledge, skills and talents for the development of the Academy by participating in planning meetings with the entire group or in smaller subsets.

RCPS has long-term partnerships with local colleges and universities, including Virginia Commonwealth University (VCU), Virginia State University (VSU), Old Dominion University (ODU), and J. Sargeant Reynolds Community College (JSRCC). RCPS teachers have engaged in professional development and students have participated in school, summer and Saturday programs in these partnerships.

Students have taken dual enrollment courses at JSRCC as agreed upon in articulation agreements since 1997. See Appendix E for the current contract. Deans from the School of Mathematics and Science and School of Nursing and Allied Health are members of the Academy's Advisory Board.

Numerous planning consultations for the development of the Academy have occurred with representatives from higher education. Dr. John Ritz, Old Dominion University, has

provided considerable information and training regarding Project Lead the Way for Engineering and Technology pathway teachers.

The planning committee met at VSU with faculty from the School of Engineering. Dr. Keith Williamson, Associate Professor, and Chair, Engineering and Technology, brought staff to RTC to help plan for the Academy. Dr. Williamson pledged to provide professional development for Academy teachers, campus tours for students, and summer enrichment opportunities for students in the RAPME Program, under the direction of Dr. Gymama Slaughter. An initial meeting with Dr. Acevedo, Professor and Chair, Health and Human Performance at VCU, was extremely helpful in defining the scope of the Therapeutic Services pathway. He also pledged the involvement of Alan Freedman, Director of Clinical Experiences for the Athletic Training Education Program, Department of Exercise Science. Mr. Freedman has agreed to provide professional development for teaching staff, job-shadowing experiences with athletic trainers for Academy students and continued involvement as a planning committee and advisory board member.

Valuable input from Kevin Harris, Director, VCU Diversity Access Programs, Health Careers/Education and Special Services for Students, has strengthened the program development of the Academy's Therapeutic Services pathway. Mr. Harris and his staff have pledged their support in the implementation of the Academy, specifically the Therapeutic Services pathway. The focus of the Diversity Access Program is to encourage minority student participation in health careers through an array of enrichment programs and services. Mr. Harris has pledged support of this pipeline of programs to enhance Academy activities and to provide RCPS students with exposure to health careers as early as fourth grade.

Richmond Technical Center principal, career coordinator, faculty, and the instructional specialist for dual enrollment met with JSRCC staff to confirm approved dual enrollment courses and Academy teacher qualifications. JSRCC staff included: Dr. Robert Heinz, Interim Dean of Engineering and Manufacturing; Joel Adler, Interim Dean of Allied Health; and Tracey Banks, Coordinator of Dual Enrollment. RCPS staff included: Nelson Colbert, RCPS Coordinator, Dual Enrollment; Erlene Carter-Dabney, RTC Guidance Counselor; and Mauricee Holmes, RTC Principal.

Dr. Oris Griffin, Associate Professor, Office of Special Assistant to the President, James Madison University, led an enrichment program to help encourage and prepare RCPS students

for postsecondary education. Dr. Griffin has pledged her involvement and assistance in developing and providing professional development for Academy teachers and campus tours for Academy students.

Numerous businesses have expressed interest in future involvement in the Academy and will be consulted and included in the Academy's implementation. For example, Brandon Ream, Director of Physical Therapy and co-owner of Virginia Sports Medicine and Physical Therapy, has served as a consultant and provided valuable insight in planning the Academy. Mr. Ream has pledged job-shadowing experiences for students and teachers. Melvin Flemming, Jr., Project Designer, Timmons Group, Inc., has also been a valuable asset as consultant in the planning and development of the Academy.

Mr. Raymond Cousins, RTC/CTE Advisory Chairman and Work force Development Consultant has been an active and committed member of the Academy's Planning Committee. The RTC/CTE Advisory Council has agreed to pay the student scholarship fee for Academy students' participation in the RAPME Summer Enrichment Program. Jim Donahue, Account Executive, Public Sector, K-12, Virginia Building Efficiency for Johnson Control, has been a valuable contributor to the development of the Academy. Johnson Control, an engineering company in close proximity to RTC, has agreed to provide student mentoring and internships, job shadowing for students and teachers in its simulation lab, and workshops for staff and students. Dr. Laurie Keating, Vice-President of Technology Research and Planning for the Center for Educational Learning Technology (CELT) Corporation, has agreed to provide guidance to the RCPS Information Technology Department for the installation of software and hardware for the Academy.

All partners have agreed to serve as presenters for career fairs, mock job interviews, presentations and role models for students. All members of the Academy planning committee, RTC/ CTE Advisory Council, CTE Advisory Board, and Academy advisory board have agreed to serve as full partners in the development and implementation of the Academy.

Parent, Student, and Community Involvement

The Academy will actively seek parent and community involvement. Research conducted, compiled and presented by two of the nation's foremost authors on parent

involvement shows that students with involved parents, no matter what their income or background are more likely to:

- Earn higher grades and test scores, and enroll in higher-level programs;
- Be promoted, pass their classes and earn credits;
- Attend school regularly;
- Have better social skills, show improved behavior and adapt well to school; and
- Graduate and go on to postsecondary education.

(A New Wave of Evidence: The Impact of School, Family, and Community Connections on Student Achievement, by Anne T. Henderson and Karen L. Mapp; Austin, TX: Southwest Educational Development Laboratory, 2002)

The community also plays a distinct role in providing support for both parents and students. The RCPS Office of School Community Partnerships has been created to develop, promote and assist in the coordination of collaborative efforts between schools and the business, faith and civic communities. This is an effort to create and foster relationships beneficial to RCPS and to the community at large. These partnerships help students connect with a larger world outside of their community. Students benefit from the care and enthusiasm resulting from healthy interactions of volunteers from other cultures, races, and income groups. Students are able to benefit from the support and resources of adults other than their parents, teachers and principals. This type of positive interaction nurtures positive self-esteem and combats negative, anti-social behavior.

RCPS will recruit parent and community involvement for the Academy through a variety of forums presenting information on the purpose and goals of the Academy, career options and the required academic preparation for each pathway. Information will be provided to dispel myths and biases towards pathway occupations, encouraging the participation and enrollment of females and other minorities.

Beginning in middle school, students will develop Academic and Career Plans to ensure that course selections are aligned with their academic and career goals after the Academy. Planning will include input and review from parents.

Tours of the RTC facility along with classroom observations and demonstrations will be provided to the community to recruit partnerships and to promote the Academy pathways. The Academy and its two pathways will be showcased at Career Fair presentations to the community

and business professionals. Brochures will be developed and provided at presentations to RCPS PTA/PTO meetings. Conversations have been initiated with a business partner for the development of a pro bono marketing plan that will disseminate information about the Academy.

Presentations and training for RCPS middle school counselors and teachers will be held to increase the quality of information presented during counseling sessions to educate students and parents.

Program Description

The Governor's Career and Technical Academy for STEM in Richmond will offer RCPS students a rigorous academic and technical program of study in two career pathways (Engineering and Technology and Therapeutic Services). Courses will emphasize in-depth understanding, connect new ideas to prior knowledge, encourage exploration, and help students construct meaning from course content. A plan of study for each pathway is included in Appendix F. Each plan of study shows the level of academic rigor required for program completion. This includes meeting the requirements of the Commonwealth Scholars Course of Study, the Standard Technical Diploma and the Advanced Technical Diploma.

The pathways are a combination of academic and technical study that will integrate classroom and real-world learning. Middle, high school and summer program components will employ hands-on, project-based instruction. Academy coursework, teacher professional development, academic support, career and college development activities, along with parent and community involvement will create a STEM community of learners.

The Project Lead the Way (PLTW) curriculum will be integrated into the Academy's Engineering and Technology pathway program of studies. PLTW is modeled after introductory engineering courses taught at the university level. The Therapeutic Services pathway will provide instruction that will focus on emergency medical services and an introduction to sports medicine. Additional health-related pathways will be considered for development and expansion of the Academy.

The Academy will prepare students for a full range of postsecondary opportunities, formal employment training, apprenticeships, the military and high-skill, high-wage, high-demand employment.

Summer enrichment activities and mathematics classes will provide students with the information, instruction and support needed to help them to realize their full potential and achieve at a high level.

A program component, “Camp Confidence” has been designed to help students to develop problem-solving and decision-making skills. These skills will be addressed in interactive seminars convened twice per month during the school year. Parents will also be expected to attend a minimum of four sessions. In addition to these seminars, activities will be offered that will support the learning and development of students outside of the classroom. (Appendix G)

Students pursuing the Engineering and Technology pathway will need a strong background in mathematics. RCPS offers a mathematics summer school program. These summer courses will be presented to Academy students and parents in academic advisement sessions as options to support the achievement of academic and career goals. Four courses are designed for rising sixth-, seventh- and eighth-graders. The courses will serve as acceleration for some students and an intervention/remediation for other students at risk of failing the SOL exams.

Goal Statement

There is compelling evidence suggesting that by the fifth grade, students have developed the conceptual framework necessary to understand vocational preparation requirements and that by the sixth or seventh grade, students may have already begun adjusting both their aspirations and their expectations downward. (“Children’s Perceptions of Vocational Preparation Requirements”, Anne E. Blackhurst, Richard W. Auger and Kay Herting-Wahl ASCA Professional School Counseling, 2003)

The Academy and its partners are committed to developing a program that will support and engage students in a variety of middle school and summer experiences designed to help them to achieve in a rigorous high school component.

The Academy goal is to raise student aspirations and attract more students to postsecondary education in preparation for technical careers, especially targeting students who might otherwise have settled for a curriculum that did not prepare them well for postsecondary education or work.

Therapeutic Services Pathway

The Therapeutic Services pathway will provide students the opportunity to understand the relationship of their studies of the complexities of life science and biology to careers in the health care industry. The academic program, along with hands-on activities, interaction with mentors, and job shadowing, will provide students with projects designed to increase their critical thinking skills, and abilities to observe and discover. Students will learn how to collect and assess data, make interpretations and communicate their findings.

Students will visit the VCU Exercise Physiology Laboratory and Sports Medicine Research Laboratory providing opportunities to make connections between studies and real-life work experiences.

Collaboration with the VCU Center on Health Disparities will provide programming from its *Pipeline to the Health Careers Program* to address the needs of middle school, minority and disadvantaged students. Approximately 80 percent of the RCPS school population receives free or reduced lunches (a commonly used indicator of poverty). The ethnic breakdown of RCPS students is: African American: 21,408, Asian: 178; Hawaiian: 2; Hispanic: 884; Native American: 13; White: 1,730; Unspecified: 11; Total: 24,226 (January 2009)

The VCU Department of Health and Human Performance will provide job-shadowing opportunities for Therapeutic Services pathway students. Fifteen students will shadow VCU sports trainers who are contracted by RCPS to provide athletic services for RCPS sports teams at five high schools. During these experiences students will learn how to care for and help athletes prevent injuries that occur during practices and competitions. In addition, students will have the opportunity to shadow VCU sports trainers during VCU athletic events.

Students can take up to four JSRCC dual enrollment courses for a total of thirteen credits along with the following license and certifications in the Therapeutic Services pathway:

Certification, Licensure, Assessment

Medical Terminology

- VA Workplace Readiness Assessment (NOCTI)
- IC3 Certification (Certiport)

Emergency Medical Technician I, II and III

- VA Workplace Readiness Assessment (NOCTI)
- IC3 Certification (Certiport)

- EMS First Responder Certification (VDHOEM)
- Emergency Medical Technician (VDHOEM)
- Cardiopulmonary Resuscitation (CPR)

Completion of Academy courses will enable students to pursue associate degree programs at J. Sargeant Reynolds Community College and undergraduate studies in Health and Human Performance Program (Exercise Science) at Virginia Commonwealth University.

Middle School Component

The Therapeutic Services pathway middle school component is designed as a pre-Academy experience for students; courses are not required for Academy admissions. The following three courses will be offered to rising sixth-, seventh- and eighth-grade students during the academic year at their middle schools.

Sixth grade:

- **Family and Consumer Sciences Exploratory (VDOE 8208)** This eighteen-week course provides a foundation for managing individual, family, career, and community roles and responsibilities. In FACS Exploratory I, students focus on areas of individual growth such as personal goal achievement, responsibilities within the family, and accountability for personal safety and health. They also explore and practice financial management, clothing maintenance, food preparation, positive and caring relationships with others, and self-assessment as related to career exploration. Students apply problem-solving and leadership skills as they progress through the course. Mathematics, science, English, social sciences, fine arts, and technology are integrated throughout the course.

Seventh grade:

- **Keyboarding (VDOE 6150)** This eighteen-week course is designed for middle school students to develop and enhance touch skills for entering alphabetic, numeric, and symbol information on a keyboard. Students compose and produce personal, educational, and professional documents.
- **Make it Your Business (VDOE 6111).** This eighteen-week course is design, establish, and operate a small group or class business, producing a service or product that meets an identified school or community need. Emphasis is placed on the introduction and application of business terminology, basic entrepreneurship concepts, and fundamental

business principles. Basic academic skills (mathematics, science, English, and history/social science) are integrated into this course.

Eighth grade:

- **Computer applications (VDOE 6617)** This eighteen-week course is designed for students to develop or review correct keyboarding techniques and gain a basic knowledge of word processing, spreadsheet, database, graphics, and telecommunications applications. Students demonstrate an understanding of computer concepts through application of knowledge. Students learn to use software packages and local and worldwide network communications systems.
- **Career Investigations I (VDOE 9070)** Phase I career program that prepares students to be "career investigators." To obtain the title, students must assess their roles in society, identify their roles as workers, analyze their personal assets, complete a basic exploration of career clusters and select career fields or occupations for further study, and secure a career investigator (job shadowing) position with a local employer.

All middle school students will have an opportunity to select the career and technical education courses to enhance their interest in health and sciences careers. Through each middle school CTE course, students and parents will be able preview the Therapeutic Services pathway for high school.

Summer School Component

Middle school students interested in the Therapeutic Services pathway will be offered a wide range of summer, pre- Academy experiences that will provide exposure to health care careers and professionals. VCU's Summer Enrichment Day Camp will provide students (grades six and seven) with hands-on exposure to the health field including medicine, dentistry, occupational therapy, pharmacy, life sciences and healthy lifestyles.

VCU's Medical Center JR (MCJR) Project Health Careers Early Learning Program will provide interactive workshops for eighth grade students and their parents. These ninety-minute workshops will address topics such as: academic preparation, financial aid planning, community service, and goal setting.

Plans are underway to develop a two- week camp experience for students that will be conducted by the MathScience Innovation Center. The camp will be modeled after Powhatan County Public School’s first ever engineering camp. The camp will target rising ninth and tenth graders. The program will consist of daily design challenges, field trips to construction sites and engineering companies, team building activities, problem-solving activities, and guest speakers from NASA. Students will attend the program from Monday to Thursday, 9 a.m.-1 p.m. Field trips will be held each Friday.

Students will also benefit from a variety of field trips to area hospitals, fire stations, airport, and YMCA.

High School Component

JSRCC dual enrollment courses will be offered to students and taught at the Academy located on the Richmond Technical Center campus.

Therapeutic Services Pathway Curriculum Design (All courses required for graduation from Academy pathway except keyboarding)
Keyboarding Applications (VDOE 6152)
Medical Terminology (VDOE 8383)
Medical Terminology HLT 143 (3 Credits)
Introduction to Health and Medical Sciences (VDOE 7555)
Medical Terminology HLT 144
Human Anatomy and Physiology (VDOE 4330)
Nutrition and Wellness (VDOE 5147)
Emergency Medical Technician I (VDOE 8333)

Therapeutic Services Pathway Curriculum Design (continued)
Emergency Medical Technician EMS 111 (6 credits)
Emergency Medical Technician II (VDOE 8334)
Emergency Medical Technician EMS 120 (1 credit)
Emergency Medical Technician III (VDOE 8335)
Sports Medicine I (VDOE 7660)
Sports Medicine II (VDOE 7662)

Course Descriptions

Course descriptions are as follows:

Medical Terminology (VDOE 8383) covers word building and term comprehension in a scientific manner for the accurate description of the human body.

Medical Terminology (HLT 143 and 144) provides an understanding of medical abbreviations and terms includes the study of prefixes, suffixes, word stems, and technical terms with emphasis on proper spelling, pronunciation, and usage. Emphasizes more complex skills and techniques in understanding medical terminology.

Introduction to Health and Medical Sciences (VDOE 7555) is an introductory course designed for potential Certified Nursing Assistant (CNA) students. This course introduces students to a variety of health care careers and develops basic skills required in all health and medical sciences. It is designed to help students understand the key elements of our health care system and examine and match one's skills with nursing careers.

Human Anatomy and Physiology (VDOE 4330) provides an explanation of the chemical and physical phenomena underlying the structure and function of systems of the human body. Identifies, explains functions of chemical networking of the various body parts in relation to the total system. In addition, this course provides detailed explanations of the functions of the human

body not covered in biology and develops basic knowledge of physiology as represented by the latest advances.

Nutrition and Wellness (VDOE 5147) Students focus on making choices that promote wellness and good health; analyzing relationships between psychological and social needs and food choices; choosing foods that promote wellness, obtaining and storing food for self and family; preparing and serving nutritious meals and snacks; selecting and using equipment for food preparation; and identifying strategies to promote optimal nutrition and wellness in society. Teachers reinforce the basic skills of mathematics, science, and communication, throughout the content.

Emergency Medical Technician I, II and III (VDOE 8333, 8334 and 8335) Students will focus on the role and responsibilities of emergency rescue workers, basic medical terminology, and health care skills that include first aid, cardiopulmonary resuscitation; aseptic technique, and related anatomy and physiology and disease knowledge. Instruction also emphasizes proper care and use of common emergency equipment and safe methods for lifting moving and transporting injured persons. Supervised, on-the-job and patient care experiences are part of the instructional program.

Emergency Medical Technician (EMS 111 and EMS 120) are courses needed to prepare students for certification as a Virginia and/or National Registry EMT-Basic. Includes aspects of pre-hospital basic life support as defined by the Virginia Office of EMS curriculum for Emergency Medicine Technician Basic Lecture and Laboratory and is a component of the JSRCC Emergency Medical Services-Paramedic Associate of Applied Science degree program.

Sports Medicine I and II (VDOE7660, 7662) is designed to provide students with a strong foundation in the field of sports medicine/athletic training. Students will develop skills in assessment, care, and evaluation of an athlete's injury or illness; advise athletes on the proper use of equipment; plan and implement comprehensive athletic injury and illness preventative programs; and develop training programs and routines designed to improve athletic performance.

In addition to coursework, students will visit the VCU Exercise Physiology Laboratory and Sports Medicine Research Laboratory. The Exercise Physiology Laboratory contains equipment related to both applied physiology and biochemistry applications. It is a 1,400 sq. ft. human performance laboratory, 200 sq. ft. biochemistry and blood preparation laboratory, 800 sq. ft. body composition laboratory, a 2,000 sq. ft. exercise room, and three 120 sq. ft. office spaces. The

laboratory contains equipment related to both applied physiology and biochemistry applications.

Students will also visit the VCU Sports Medicine Research Laboratory (SMATR) for exposure to research opportunities for all levels of students ranging from secondary to doctoral studies. The laboratory is a 1,400 sq. ft. facility with an additional 200 sq. ft. of quiet space for testing. The general focus of the SMATR laboratory is lower extremity injury with emphases on anatomical, biomechanical, and factors contributing to injury. Current research activities are focused on factors contributing to functional ankle instability. The lab is accessible year-round, and includes state of the art instrumentation for assessment of human neuromuscular performance, joint laxity, and postural stability.

High School Summer Programs

The high school summer component consists of the following programs:

- Youth Health Services Corps – The program provides leadership training and placement for students in community service agencies providing health care to vulnerable, underserved populations.
- VCU Medical Center Junior Volunteers – Junior volunteers assist staff, patients, and their families during one or two summer sessions in July or August. This program gives students an insider’s view of careers in health care.
- Camp Confidence – summer leadership program that exposes students to the Virginia Workplace Readiness Skills.

Engineering and Technology Pathway

The hallmark of the Academy’s Engineering and Technology pathway program is a curriculum that is designed to make mathematics and science relevant. Students will learn how to become productive members of teams and also how to communicate effectively.

The Project Lead the Way (PLTW) curriculum will be integrated into the Academy’s Engineering and Technology pathway program of studies. PLTW is modeled after introductory engineering courses taught at the university level. By engaging in hands-on, real-world projects, students will learn how the skills they are learning in the classroom can be applied in everyday life. This approach used by PLTW is known as activities-based, project-based and problem-based (APPB) instruction. Students also learn how to define problems, set timelines, become leaders,

team members and problem solvers.

Instructors will teach students the key elements and skills of engineering and technology-based careers by immersing them in rigorous engineering problems. The pathway course of study is an activity-oriented curriculum designed as explorations and inquiries in mathematics, science, and technology. Principles and concepts are taught that will focus on showing, not telling students how to use engineering skills to solve everyday problems.

Students will have the opportunity to take five JSRCC dual enrollment courses totaling fourteen credits and earn the following certifications, licensure and assessments:

Certification, Licensure, Assessment

Principles of Engineering

- Pre-Engineering Assessment (NOCTI)
- VA Workplace Readiness Assessment and IC3 Certification (Certiport)

Introduction of Engineering Design

- Pre-Engineering Assessment (NOCTI)
- VA Workplace Readiness Assessment (NOCTI) IC3 Certification (Certiport)

Digital Electronics

- Pre-Engineering Assessment (NOCTI)
- VA Workplace Readiness Assessment (NOCTI) and IC3 Certification (Certiport)

Digital Visualization

- Pre-skill Assessment for Mastercam Certification (NOCTI)
- VA Workplace Readiness Assessment (NOCTI) and IC3 Certification
- AutoCAD Certifications (Brainbench)
- Autodesk Application Certification Program (Autodesk)
- Brainbench Web Design and Development Certification (Brainbench)
- Certified SolidWorks Professional (SolidWorks Corporation)

Engineering Drawing and Design

- Pre- Engineering Assessment (NOCTI)
- VA Workplace Readiness Assessment (NOCTI) and IC3 Certification
- AutoCAD Certification (Brainbench)
- Autodesk Application Certification Program (Autodesk)
- Brainbench Web Design and Development Certifications (Brainbench)

- Certified Solidworks Professional (SolidWorks Corporation)

Architectural Drawing and Design; Advanced Architectural Drawing and Design

- AutoCAD Certification (Brain Bench)
- Autodesk Application Certification Program (Autodesk)
- Brainbench Web Design and Development Certifications (Brainbench)
- Certified SolidWorks Professional (SolidWorks Corporation)
- Pre- Skills Assessment for Mastercam Certification (NOCTI)
- VA Workplace Readiness Assessment (NOCTI) and IC3 Certification (Certiport)

Middle School Component

The Engineering and Technology pathway middle school component is designed as a pre-Academy experience for students. Courses are not required for Academy admissions. The following two courses will be offered to rising sixth- and seventh-grade students during the academic year.

Sixth grade:

- **Introduction to Technology (VDOE 8483)** This nine-week course will introduce students to the basic elements of all technology, including processes, energy, information, and people. Students will explore up to four systems of technology, including construction, transportation, communication, and production/manufacturing. Students will relate the impact of technology on society, environment, and culture to future consequences and decisions.

Seventh grade:

- **Inventions and Innovations (RCPS 5431)** During this eighteen-week course, students will make models of significant inventions that have advanced society. After studying these developments, they will explore contemporary technological problems facing them, their community, or the world, and apply systematic procedures to invent new products or innovations as solutions.

Thirty eighth-grade students will have the opportunity to take Project Lead the Way “Gateway to Technology” courses. Currently, only two middle schools are contracted to offer the program. Future plans are to phase in one to two middle schools per year.

Gateway to Technology Project Lead The Way	
Design and Modeling	Students use geometry, problem solving, teamwork, and project management skills to design and develop product prototypes
The Magic of Electrons	Students are engaged in relevant, hands-on projects; students unravel the mysteries of digital circuitry
The Science of Technology	Students apply scientific principles and concepts of simple machines and energy to solve real world problems
Automation and Robotics	Students design and build automated systems, incorporate the principles of electrons, physics, robotics to gain an enriched understanding of the contemporary mechanical world

Students interested in pre-Academy experiences can also take the Technological Systems course. Technological Systems (VDOE 8463) is an eighteen-week course where students combine resources into systems, realizing technology as a system. By simulating systems and assessing their impacts, students gain insight into how to approach the problems and opportunities of a technological world in a broad sense. Students will also explore occupational areas and educational programs for technology-oriented careers.

Summer Component

Summer experiences are designed to be both rigorous and engaging. Mathematics is an integral part of engineering and is a required subject for those pursuing studies in the Engineering and Technologies pathway. The Summer Mathematics Program will provide a means of acceleration for some students and intervention/remediation for other students at risk of failing the SOL examinations.

Richmond City Public Schools Summer Mathematics Program

Course	Purpose
Advanced Mathematics I (Grade 6)	The course provides an avenue for single or double acceleration for students who achieve a qualifying score on the ARDT, receive teacher recommendations, have an average mathematics grade of 'B,' successfully complete the Advanced Mathematics Summer Program and receive a qualifying score. These students will be taught the curriculum for one to two grade levels above their current grade level. Students will also take the appropriate Virginia Standards of Learning exam for the curriculum received, resulting in students completing either Algebra I or geometry in eighth grade.
Advanced Mathematics II (Grade 7)	The course provides an avenue for single or double acceleration for students who achieve a qualifying score on the ARDT, receive teacher recommendations, have an average mathematics grade of 'B,' successfully complete the Advanced Mathematics Summer Program and receive a qualifying score. These students will be taught the curriculum for one to two grade levels above their current grade level. Students will also take the appropriate Virginia Standards of Learning exam for the curriculum received, resulting in students completing either Algebra I or geometry in eighth grade.
Accelerated Mathematics – Grade 6	The course provides an avenue for students who are performing below grade level on a few Standards of Learning (SOL). The condensed, grade-level curriculum is correlated to the state standards. Every lesson uses manipulatives to guide students to discover mathematics concepts and engage in problem solving.
Algebra Readiness Summer (Grades 7 and 8)	The course prepares students for success in algebra. It is designed to provide mathematics intervention for students at-risk of failing the Standards of Learning test as demonstrated by their individual performance on the Algebra Readiness Diagnostic Test (ARDT).
Advanced Mathematics II (Grade 8)	The course provides an avenue for single or double acceleration for students who achieve a qualifying score on the ARDT, receive teacher recommendations, have an average mathematics grade of 'B,' successfully complete the Advanced Mathematics Summer Program and receive a qualifying score. These students will be taught the curriculum for one to two grade levels above their current grade level. Students will also take the appropriate Virginia Standards of Learning exam for the curriculum received, resulting in students completing either Algebra I or geometry in eighth grade.
Accelerated Mathematics – (Grade 7)	The course provides an avenue for students who are performing below grade level on a few Standards of Learning. The condensed, grade-level curriculum is correlated to the state standards. Every lesson uses manipulatives to guide students to discover mathematics concepts and engage in problem solving.

Engineering and Technology Pathway Program Summer Component		
Grade	Project	Focus
Eighth Grade (fifteen slots reserved for eligible Academy students)	RAPME Summer Institute	The Institute is a three- to five-week academic program whereby students will be provided with career information, options and requirements. Students will participate in engineering related classroom projects and visit local area engineering firms to view firsthand, the work of engineers. Seminars conducted by practicing engineers in various occupations will also be provided.
Eighth Grade	Virtual Worlds Summer Program	Teams of students will create their own virtual (three dimensional multiuser) worlds (computer graphic exhibits) using computer software. Students will receive support and guidance from undergraduate VCU students within the virtual universe. (Appendix H)

High School Component

All ninth-grade students are eligible for admission into the Academy. The PLTW program will be phased in so that it is available to students as they advance to the next grade level. Students will take two, ninety-minute classes every other day.

Engineering and Technology Pathway Program Curriculum Design
Course
(PLTW) Introduction to Engineering Design VDOE 8439
Digital Visualization VDOE 8459
Digital Visualization VDOE 8459
(PLTW) Principles of Engineering VDOE 8441
(PLTW) Principles of Engineering VDOE 8441
(PLTW) Digital Electronics VDOE 8440
(PLTW) Digital Electronics VDOE 8440
(PLTW) Introduction to Engineering Design VDOE 8439
Architectural Drawing and Design VDOE 8437
Computer Aided Drafting I DE/DRF 231
Advanced Architectural Drawing and Design VDOE 8492
Computer Aided Drafting II DE/DRF 232
Engineering Design and Development VDOE 8443 (PLTW)
Engineering Graphics DE/EGR 110
Introduction to Engineering Design DE/EGR 123
Introduction to Engineering and Engineering Methods DE/EGR 124

Course Descriptions

All of the following courses are required for Academy graduation from the Engineering and Technology Pathway:

Introduction to Engineering Design (VDOE 8439) uses a design development process while enriching skills; students create and analyze models using specialized computer software.

Digital Visualization (VDOE 8459) Students gain experiences related to computer animation by solving problems involving 3-D object manipulation, story boarding, texture mapping, lighting concepts and environmental geometry. They produce animations that include interdisciplinary projects related to science, engineering, and the entertainment industry. A major emphasis is placed on the production of a portfolio that showcases examples of student's original work.

Principles of Engineering (VDOE 8441) explores technology systems and manufacturing processes, addressing the social and political consequences of technological change.

Digital Electronics (VDOE 8440) teaches applied logic through work with electronic circuitry; which students also construct actual applications and test for functionality.

Architectural Drawing and Design (VDOE 8437) teaches students principles of architecture and increases their understanding of working drawings and construction techniques. Students use computer-aided drawings and design (CADD) equipment and established standards or codes to prepare models for presentation.

Engineering Design and Development (VDOE 8443) consists of small teams of students spending the year solving a problem of their own choosing. The teams apply principles developed in the four preceding foundation courses. Students employ skills and knowledge to brainstorm possibilities, research current patents and regulations, construct a working model, test the model in real-life situations (or simulation); document their designs, and present and defend the design to a panel of experts comprised of Academy Partners and Advisory Board members.

Engineering Graphics (DE/EGR 110) (3 credits) presents theories and principles of orthographic projection. Studies multiview, pictorial drawings and sketches, geometric construction, sectioning, lettering, tolerancing, dimensioning, and auxiliary projections. Studies the analysis and graphic presentation of space relationships of fundamental geometric elements, points, lines, planes and solids; includes instruction in computer-aided drafting.

Introduction to Engineering Design (DE/EGR 123) (2 credits) introduces the fundamental knowledge and experience needed to understand the engineering design process through the

basics of electrical, computer, and mechanical systems. Includes the completion of a project in which a specific electromechanical robot kit will be analyzed, assembled, and operated.

Students will present project results orally and in writing.

Introduction to Engineering and Engineering Methods (DE/EGR 124) (3 credits) introduces the engineering profession, professionalism, and ethics; covers problem presentation, engineering calculations, digital computer applications, word processing, worksheets, programming in FORTRAN or C++ and elementary numerical methods.

Computer Aided Drafting I (DE/DRF 231) (3 credits) teaches computer-aided drafting concepts and equipment. Develops a general understanding of components and operating a typical CAD system. Lecture and laboratories.

Computer Aided Drafting II (DE/DRF 232) (3 credits) teaches advanced operation in computer-aided drafting. Lecture and laboratories are included.

Academic Year Activities

The VCU Engineering Department will conduct the following academic year, extracurricular activities for Engineering and Technology pathway students:

The VCU Engineering Department Partnership Activities	
Activity	Format
Introduction to Engineering and Chemical Engineering	Two hands-on activities to be held during the fall semester for eighth-grade students (1/2 days)
Computer Science and Biomedical Engineering	Two hands-on activities for ninth-grade students (1/2 days)
Electrical Engineering (Circuits Lab) and Computer Engineering (Clean Room)	Two hands-on activities for tenth-grade students (1/2 days)
VCU Tour and a VCU Engineering Information Session	A full day session for eleventh-grade students
The VCU Engineering Department Partnership Activities	
Activity	Format
Mechanical Engineering	Half day, a hands-on activity for twelfth-grade

	students
The VCU Engineering Expo (Senior VCU students display their Senior Design projects which range from robotics to the redesign of roller coaster seats to blimps)	Academy students will be invited to attend. Held annually in April
Résumé writing, interview skills, and scholarship application preparation workshop	Session conducted for twelfth-grade students by the National Society of Black Engineers (NSBE) and VCU Engineering alumni
Recognition ceremony	Academy graduates, parents, partners, faculty and staff will attend.

Academy Completion Requirements

Academy completion will be determined by the following criteria:

- Commonwealth Scholars requirements;
- Advanced Studies Diploma, Technical or Advanced Technical Diploma;
- A minimum of fourteen transferable dual enrollment credit for Engineering and Technology Pathway students;
- A minimum of ten transferable dual enrollment credits for Therapeutic Services Pathway students;
- One or more CTE credentials approved by the Virginia Department of Education; and
- Successfully pass the Virginia’s Workplace Readiness Skills Assessment.

Work-based Experiences

The VCU Department of Health and Human Performance will provide job shadowing for Therapeutic Services pathway students. All students will shadow VCU sports trainers who are contracted by RCPS to provide athletic services for RCPS sports teams at five high schools. During these experiences, students will learn how to help athletes prevent injuries that occur during practices and competitions. In addition, students will have the opportunity to shadow VCU sports trainers during VCU athletic events.

Therapeutic Services pathway students will also participate in the following career development experiences:

- VCU Volunteers Youth Health Services Corp will provide students with leadership training and placement for students in community service agencies providing health care to vulnerable, underserved populations; and
- VCU ACEe will provide students with clinical experiences and first-hand knowledge about medical careers.

Engineering and Technology pathway students will participate in the Richmond Area Program for Minorities in Engineering (RAPME) Summer Institute. RAPME will provide students with opportunities to engage in engineering related classroom projects and visit local area engineering firms. Students will participate in job shadowing at Academy partner firms Ronald Williams, LTD, and the Timmons Group. Seminars conducted by practicing engineers in various occupations will also be provided.

Career and College Development Activities

RCPS sixth-grade students will work closely with their school counselors to develop student portfolios. Eighth-grade students interested in pursuing studies at the Academy will be required to work collaboratively with parents and guidance counselors to prepare an Academic and Career Plan outlining an intended course of study.

Career Cruising, an interactive, online career resource will be used by school counselors to help students move seamlessly through the career exploration and planning process. Students will use *Career Matchmaker* and *My Skills* as tools to provide feedback to understand how careers relate to their skills and interests. Students' Academic and Career Plans will be fully integrated with the *Career Cruising* guidance system. Students will be able to create a personalized four-year high school education plan and develop résumés. Comprehensive detailed information, including a national database of postsecondary schools will provide students, parents and counselors with information on admissions and expenses.

Completion of career interest inventories will be documented in student portfolios. Kuder's Assessment or Virginia Wizard, Explorer, PreACT, PSAT scores, SAT scores, and other tools that help identify skills, interests, aptitudes and academic abilities will also be included. Career interest inventories and their findings will be used to engage parents, students, teachers, and counselors in a collaborative career planning process.

Academic and Career Plans will be updated annually for counseling sessions with parents and students prior to course selection for the next school year. Students will be encouraged to review their plans twice a year.

An Academy Course Selection Guide will serve as a directory for parents and students. The guide will provide general information about the Academy, course offerings and graduation requirements. School counselors will use the guide to help students make decisions such as balancing Advanced Placement and dual enrollment courses.

Length of Program and Daily Schedule

The following chart depicts the schedule of Academy high school students on an odd and even schedule.

Odd Calendar Days:	
High School	
7:15 a.m.- 7:25 a.m.	Homeroom
7:25 a.m. - 8:50 a.m.	Block One-Core Subject (Period One)
8:55 a.m. - 10:25 a.m.	Block Two-Core Subject (Period Three)
RTC	
10:30 a.m. - 10:55 a.m.	Commute to RTC
11:05 a.m.	Student Arrival
11:10 a.m. - 2:10 p.m.	Therapeutic Services Pathway Course Or Engineering and Technology Pathway Course
Even Calendar Days	
High School	
7:15 a.m. - 7:25 a.m.	Homeroom
7:25 a.m.- 8:50 a.m.	Block One-Core Subject (Period Two)
8:55 a.m.- 10:25 a.m.	Block Two-Core Subject (Period Four)
10:30 a.m.- 10:55 a.m.	Commute to RTC
11:05 a.m.	Student Arrival
11:10 a.m.- 2:10 p.m.	Therapeutic Services Pathway Course Or Engineering and Technology Pathway Course

Number of Students and Grade Levels

The potential for enrollment in the Academy is 180 students in year four. Forty-five openings will be allocated for rising eighth-grade students during the first year, allowing for fifteen students in the Therapeutic Services pathway and thirty in the Engineering and Technology pathway. Each year the Academy will add an additional forty-five students.

Site Locations and Course Delivery

The Academy will be located in the RCPS Richmond Technical Center (RTC). It serves RCPS high school students during the day and adults in the evening (approximately 12 percent are from surrounding counties).

RTC is fully accredited and currently offers 42 Career and Technical Education (CTE) programs (69 courses) in five clusters: personal/business services; transportation and manufacturing; construction; technology and communication; and medical services. RTC also offers 13 dual enrollment courses, 14 honors courses, two diploma seals, and 86 credential opportunities.

Transportation

Students will be transported to and from the Richmond Technical Center to RCPS schools by RCPS school buses. Students will also be transported to any postsecondary site (JSRCC, VSU) to attend classes, field trips and summer programs and returned back to their schools. All trips will be approved by the students' parents and/or guardians. Transportation provided by the school division will be in compliance with all applicable federal and state regulations.

Student Recruitment, Selection Criteria, and Admissions

Students interested in the Academy will be offered a variety of summer experiences. The experiences are designed as a pipeline for the Academy and anyone can apply. Students will be recruited based upon their grades, motivation, interest, and teacher recommendations.

The following information and activities will be developed and targeted to all students, parents, teachers, and counselors at RCPS middle schools as follows:

1. PTA meeting presentations to include:

- An overview of the Academy;
 - Forecast of the healthcare and engineering industries;
 - Benefits of attending the Academy, dual enrollment credits, postsecondary education and a career and technical education; and
 - Question and answer session.
2. School-based “Parent’s Night” presentations to include:
- An overview of the Academy;
 - Information concerning Academy requirements (admission, graduation); and
 - Benefits of the Academy - scholarships, postsecondary education, career and technical education, industry certifications, job outlook, and potential earnings.
3. Presentations to RCPS staff and faculty in elementary and secondary schools to include:
- An overview of the Academy;
 - Course curriculum and delivery;
 - Forecast of the healthcare and engineering industries;
 - Benefits of attending an Academy, dual enrollment credit, college credit, postsecondary education and career and technical education; and
 - Question and answer session.
4. Counselor Institute workshops
- Workshops held with all RCPS counselors to provide information concerning the Academy, admission requirements, curriculum and career pathways, career and technical education, diplomas, dual enrollment credits, industry certifications and assessments.

In year one, approximately forty-five students will be admitted into the Academy. Rising ninth graders will be invited to apply for admission into the Academy. The selection criteria are based on a scoring rubric. Completion of a student application is one of the requirements. A selection committee to include partners will review the data and interview the applicants. See Appendix I.

Students will be admitted to the Academy based on the selection criteria as defined. In addition, all eighth-grade students must pass the JSRCC placement test for dual enrollment. Students must also meet with middle or high school counselors to develop an individualized high

school plan. The meeting is designed to ensure that course selections are aligned with a student's transition and career goals beyond the Academy.

Performance Measures

The focus of the Governor's Career and Technical Academy for STEM in Richmond is to offer students a solid, rigorous education in science, technology, engineering, and mathematics along with the critical skills needed to succeed in a digital, global economy. Two career pathways will prepare students for a full range of postsecondary opportunities, formal employment training, apprenticeships, and the military. Each pathway has been designed to lead students to opportunities in high-skill, high-wage, and high-demand employment areas.

The Academy goal is to raise student aspirations and attract more students to postsecondary education in preparation for technical careers especially targeting students who might otherwise have settled for a curriculum that did not prepare them well for postsecondary education or work.

Accomplishment of this goal will require the Academy's leadership to continually improve the curriculum, school climate, instruction, parent and community relations, and staff professional development. Baseline data will be established along with a process for the collection of data.

The Academy will establish baseline data during the 2009-2010 school year on the following measures:

- a. Improve academic achievement of Academy students by three percent;
- b. Increase the number of Academy student completions of dual enrollment courses with a grade "C" or better by three percent;
- c. Increase the number of relevant workplace readiness experiences for Academy students through strong partnerships with businesses by five percent;
- d. Increase the number of students who graduate from high school through Academy participation by three percent;
- e. Reduce the number of Academy student dropouts by three percent;
- f. Increase enrollment and retention in postsecondary education by one percent;
- g. Increase the proportion of Academy students completing a college and workplace ready curriculum in high school by three percent;
- h. Reduce the proportion of Academy students requiring remediation in college by one percent;
- i. Increase the number of industry certifications awarded to Academy students by two percent; and

- j. Increase the number of Academy graduates employed in high-wage, high-demand and high-skill careers by three percent.

Internal Evaluation Process

Richmond City Public Schools' *Program Accountability, Review, Monitoring, and Evaluation* (PARME) Plan will be used for collecting, reviewing and analyzing data pertaining to the Academy's policies, procedures, program design, instructional delivery and outcomes for annual reporting to the Virginia Department of Education. Reporting will also include specific student outcomes such as academic and goal achievement.

There are three components to this plan: the program logic model, the comprehensive evaluation component, and the monitoring component. The program logic model provides ongoing opportunities for stakeholders (feedback from students, staff, parents, teachers, the community and partnership members) to collect, review, and analyze program data on a regular basis to understand how, why, and for whom the program works. This process will be a collaborative endeavor, one in which evaluators, program managers/staff, as well as other stakeholders work together to design and implement the evaluation. The monitoring component will address the need to provide decision makers with program-related data summaries on an ongoing basis. Data collected will be used for program improvement.

Specifically, collaborative evaluation teams will be formed to design and conduct a process evaluation of the implementation of the Academy. These teams will also implement and monitor participant progress on the Academy performance measures, design and conduct participant surveys, and collect, analyze, and report student course grades, attendance, and test scores.

Materials and Equipment

Materials, supplies, and equipment needed for instruction and to accomplish pathway program goals and objectives have been determined and are included in the budget and budget narrative.

Sustainability of Academy

Richmond City Public Schools, in establishing the Academy, is increasing the rigor of the existing pathways for engineering and Technology and Therapeutic Services which are currently supported through Carl Perkins funds. Richmond City Public Schools will continue to devote these funds to the expanded program in the Academy.

Administrative Procedures

The Governor’s Career and Technical Academy for STEM in Richmond will maintain procedures that are developed cooperatively with participating partners and follow the provisions of the Governor’s Exemplary Standards Award Program for Career and Technical Education. Appendices J and K provide statements of support and assurance, respectively.

Governor’s Exemplary Standards Award Program for Career and Technical Education

The Governor’s Career and Technical Academy for STEM in Richmond will follow the provisions of the *Administrative Procedures Guide for the Establishment of Governor’s Career and Technical Academies*. Richmond City Public Schools and its Academy partners will ensure participation in the Governor’s Exemplary Standards Award Program for Career and Technical Education.

Academy Coordination

A coordinator will be hired to oversee, manage and direct the daily operations of the Academy. The coordinator will be responsible for:

- Developing and maintaining strong partner relationships with the community;
- Convening Advisory Board meetings and providing support for their activities;
- Promotion of the Academy and its programs to all stakeholders and potential partners; and
- Coordination of the Academy activities, field trips, etc.

The coordinator will work closely with the RCPS Coordinator for Research and Evaluation for the collection, compilation and reporting of program assessment data. The coordinator will report directly to the principal of the Richmond Technical Center. Clerical support will be provided.

Code of Student Conduct and Attendance

All students in the Academy must adhere to the Code of Student Conduct as set forth by Richmond City Public Schools and the Richmond Technical Center. In addition, students attending dual enrollment courses must adhere to the code of conduct as set forth by the Virginia Community College System. Due to the rigor of the curriculum, it is extremely important that students attend all class sessions.

Staff Recruitment, Selection, and Assignment

Recruitment for the selection and assignment of Academy staff will be conducted to hire personnel with required certifications (where applicable) and who meet Virginia teacher licensure requirements and/or postsecondary faculty qualifications. All dual enrollment courses will be taught by teachers meeting the Virginia Community College System's academic qualifications.

Staff Development

Academy staff have primary responsibility for the vision and accomplishment of Academy goals. However, learning for all stakeholders will be necessary to develop the Academy to the desired state of a "community of learners". Five learning disciplines will be used as a model to achieve goals and to establish a culture of learning: (1) personal mastery, (2) mental models, (3) team learning, (4) shared vision, and (5) systems thinking. (Schools that Learn, Senge et al. 2000)

Cross disciplinary teams will be developed to research and develop a staff development model that will sustain and support collaborative approaches for providing instruction to achieve positive student outcomes.

Annual school orientations will be held throughout the division to present an overview of the Academy's goals and purposes and will serve as the foundation for specific trainings at the elementary, middle and high school level.

The MathScience Innovation Center will develop and conduct a workshop on vertical team teaching and two weeks of summer professional development for core academic teachers and Academy instructors in each pathway. Topics for the summer sessions include nanotechnology, which will address the interests of Therapeutic Services Pathway teachers. Nanotechnology is the result of innovations in microscopy that allow humans to visualize, manipulate, and create substances at the nanoscale. This four-pronged program will include attendance at a summer institute, creation of a model lesson, implementation of classroom lessons and an educational project. Anticipated outcomes of the training are the eventual integration of nanotechnology topics into the middle and high school mathematics and science courses.

The topic selected for a given summer session will address the interests of Engineering and Technology pathway teachers. This session is also a four-pronged program that will include attendance at a summer institute, creation of a model lesson, implementation of classroom lessons and an educational project. The program will provide information for teachers to learn how to work as a member of a team to implement innovative teacher and student programs and explore new fields in engineering along with ways to connect emerging knowledge to the curriculum.

The Science Museum of Virginia (SMV) will collaborate with the VCU School of Education to provide the following for core academic teachers and Academy instructors in each pathway:

- **Therapeutic Exercise:** The focus of the sessions will be to acquaint teachers with the proper use of therapeutic exercise in the treatment and rehabilitation of athletic injuries in physically active individuals (includes the use of therapeutic exercise in the treatment of groin, thigh, hip, knee, lower leg, ankle, foot, shoulder, elbow, wrist, hand, finger and back injuries in physically active individuals), and basic nutrition requirements. Sessions will be led by educators at the athletic training faculty through the VCU School of Education.
- **Engineering for Alternative Energy:** The sessions will be held at SMV where three alternative energy demonstration projects are located. Teachers will have the opportunity to see and test geothermal, wind, solar photovoltaic, and solar thermal systems functioning under operating conditions. These projects are designed as demonstrations of working alternative energy systems: the New Energy Virginia outdoor exhibit, (geothermal loop, wind turbine, photovoltaic array with grid connection), the Solar Decathlon House (with 500 ft. deep geothermal well, 8.6 KW photovoltaic array and award winning solar design), and the Energy Performance. A hands-on, problem solving introduction to alternative energy will be provided. Teachers will learn the applications, effectiveness and efficiency of emerging energy technologies and receive teaching materials appropriate for high school technology students. Sessions will be led by educators at the Science Museum of Virginia. Opportunities will be made available for mentored student projects during the summer or school year over the course of the program.

Among the requirements of the school division agreement with PLTW is that each teacher be provided with a laptop and software that meet PLTW specifications. Each teacher must agree to become PLTW certified within two years and commit to continuous improvement. RCPS will support these requirements,

A core training PLTW summer institute will provide a two week experience conducted by practicing classroom teachers and university faculty. Classroom instruction, partnered with independent assignments, is designed to prepare teachers to teach the PLTW curriculum. A PLTW conference for guidance counselors will also be provided.

Additional professional development activities will be developed during the Academy's implementation with James Madison University and the VCU Health and Human Performance Department.

Staff Evaluation

Staff will be evaluated according to the human resources policies of Richmond City Public Schools.

Documentation of insurance and other fiscal information

RCPS shall keep in full force student malpractice blanket liability insurance covering students in the amount of \$2,000,000 per occurrence and \$5,000,000 in the aggregate.

V. Budget Narrative

Governor's Career and Technical Academy for STEM in Richmond

Direct Costs:	
Personnel:	
Program Coordinator (Part-time 50%) \$35 per hour x 20 hours per week x 48 weeks	\$33,600
Stipends: Teachers participating in RCPS training for Engineering and Therapeutic Health Pathways 4 Teachers x \$3,000 per Teacher	\$12,000
Clerical Support: \$12 per hour (Student Rate x 10 hours per week x 48 weeks)	\$5,760
Tutors: To assist students who are experiencing academic difficulties \$21 per hour x 360 hours estimated	\$7,560
Summer Camp (2010): Teachers for instruction of Per-Engineering or Therapeutic Health 2 Teachers x \$2,000 per Teacher	\$4,000
TOTAL	\$62,920
Employee Benefits:	
Fringe Benefits calculated on the total salaries of \$62,920	\$6,707
TOTAL	\$6,707

Purchased Contractual Services:	
<p>Project Lead the Way (PLTW): Annual upgrade of the software which will cover the following: AutoCAD® Architecture, AutoCAD® Inventor® Professional, Autodesk® Design Review, Revit® Architecture, AutoCAD® Revit MEP, AutoCAD® Civil 3D®, and 3ds Max Design. This annual subscription is for unlimited installations at the Richmond Technical Center (RTC)</p>	\$3,995
<p>Complete installation and configuration conducted by an Autodesk Certified Technician which includes: Autodesk product activation and authorization Computer system maintenance to optimize performance Resolve conflicts with computer protection/security software Update drivers/configure output devices Provide instructor with software orientation One-year unlimited toll-free telephone/e-mail support</p>	\$5,395
<p>Dual Enrollment: Cost of courses for students participating in dual enrollment courses at J. Sargeant Reynolds Community College (JSRCC) 15 Students in Therapeutic Health x \$267 per course x 3 courses = \$12,015 15 Students in Engineering x \$267 per course x 3 courses = \$12,015</p>	\$24,030
<p>SMV/VCU Workshops: Therapeutic Exercise Workshops for teachers with cost to include: SMV/VCU personnel cost, materials/supplies, and administrative cost \$4,577</p>	\$4,577
<p>Engineering for Alternative Energy Workshops for teachers; cost to include: SMV personnel cost, materials/supplies, and administrative cost \$7,130</p>	\$7,130
<p>Career Cruising: \$1,000 x 16 Schools (8 middle and 8 high schools)</p>	\$16,000
TOTAL	\$61,127

Staff Development:	
<p>Project Lead the Way (PLTW): Staff Development is an integral component of PLTW and instructors participating in the program will receive training three times a year, which will cost the division \$6,000 and includes:</p> <ul style="list-style-type: none"> two days of on-site professional development training which will be held on divisionwide staff development days. The training will be customized to meet the specific needs of each PLTW teacher. mandatory summer professional development for three participating teachers seeking certification as PLTW instructors. 	\$6,000
Professional Development Training:	
Conferences:	
NATA Symposium \$1,500 x 2 Instructors	\$3,000
EMS Symposium \$1,500 x 2 Instructors	\$3,000
Teacher Licensure \$1,500 x 2 Instructors	\$3,000
EMT Instructor update (yearly) \$50 x 2 Instructors	\$100
TOTAL	\$15,100

Supplies:	
<p>Dual Enrollment: Cost of college textbooks to be used by students participating in dual enrollment courses at J. Sargeant Reynolds Community College 15 students in Therapeutic Health x 3 classes x \$150 per textbook (cost of average college textbook) = \$6,750 15 students in Engineering x 3 classes x \$150 per textbook (cost of average college textbook) = \$6,750</p>	\$13,500
<p>Parental Involvement: Materials, supplies, and refreshments to be provided at a variety of forums for parents to learn about Academy's admission and completion requirements for students and expectation for parent involvement</p>	\$1,000
<p>Printing: Development of brochures to be provided for RCPS PTA/PTO meetings and other venues</p>	\$1,000
<p>Refreshments: Food/drinks for events such as:</p>	
Field trips	\$450
Confidence camp	\$1,000
Graduation Ceremony	\$250
Career Fair Presentation:	

Materials and supplies needed for presentation to showcase the Academy and its two pathways	\$1,000
Certification/Licensure for students	\$6,907
Office Supplies: Supplies for operation of Academy	\$3,500
Therapeutic Health Sports Medicine Course Supplies Course: Intro to Engineering Design	\$16,827
Project Lead the Way: First year implementation of two courses (Intro to Engineering and Principles of Engineering) and the (Gateway to Technology) units:	
Course: Intro to Engineering Design Equipment and Supplies	\$665
Consumables	\$1,104
Course: Principles of Engineering Equipment and Supplies	\$19,271
Consumables	\$309
Course: Gateway to Technology Equipment and Supplies	\$14,162
Consumables	\$630
TOTAL	\$81,575

Travel:	
Dual Enrollment: Cost of transportation for students participating in dual enrollment courses at J. Sargeant Reynolds Community College (JSRCC)-students will be transported from Richmond Technical Center (RTC) to JSRCC \$89 (mileage and driver) per day x 2 days per week x 16 week course	\$2,848
Field Trips: Engineering Pathway Program Travel from RTC to the following: VCU School of Engineering, Richmond, VA Old Dominion University, Norfolk, VA Stihl Corporation, Virginia Beach, VA Wyeth Corporation, Richmond, VA Infineon, Richmond, VA King's Dominion, Doswell, VA	

Estimated cost of field trips \$1.92 per mile x 510 miles + \$24.86 per hour x 45 hours	\$2,088
Therapeutic Health Pathway Program Travel from RTC to the following: Chesterfield Fire Station #15, Chesterfield, VA Chesterfield Airport, Chesterfield, VA Richmond Ambulance Authority, Richmond, VA Henrico Fire Station #7, Henrico County, VA Richmond Fire Station #10, Richmond, VA VCU Health Systems, Richmond, VA VCU Sports Medicine, Richmond, VA Henrico Doctors Hospital – Parham, Richmond, VA VCU-Lifevac, Richmond, VA Chippenham Sports Medicine, Richmond, VA VCU Training Room, Richmond, VA YMCA-North, Richmond, VA \$1.92 per mile x 155 miles + \$24.86 per hour x 64 hours	\$1,889
Summer Program: Student transportation to RTC from all middle schools: Bus 1 - \$1.92 per mile x 14 miles x 20 days + \$24.86 x 2 hours per day x 20 days Bus 2 - \$1.92 per mile x 24 miles x 20 days + \$24.86 x 2 hours per day x 20 days Bus 3 - \$1.92 per mile x 14 miles x 20 days + \$24.86 x 2 hours per day x 20 days	\$4,980
TOTAL	\$11,805
Equipment:	
Laptop w/accessories – Coordinator	\$1,262
Printer – Coordinator	\$405
TOTAL	\$1,667

DIRECT COSTS TOTAL IN-KIND:	
Staff Development:	
Professional Development for Staff	\$1,500
TOTAL	\$1,500

Internal Services:	
Supervision and Monitoring	\$4,500
Planning Committee/Advisory Board	\$6,500
TOTAL	\$11,000

Summer Component Activities:	
Academic Support for Students: Summer courses available for students pursuing the engineering pathway (based on the average cost per the last three years)	
Mathematics Summer School	
Personnel Cost	\$74,696
Materials/Supplies	\$14,256
Advanced Mathematics	
Personnel Cost	\$24,899
Materials/Supplies	\$4,140
VDOE Algebra Readiness Summer Program	
Personnel Cost	\$24,899
Materials/Supplies	\$369
TOTAL	\$143,259

Travel:	
Transportation to Academy: Outreach, i.e., Parent night presentation, counselor institutes	\$6,000
TOTAL	\$6,000
IN-KIND TOTAL	\$161,759

Budget Summary

A.	Direct Costs	General Funds and Carl Perkins	In-Kind (Contributions or assistance in a form other than money. Equipment, materials, or services or recognized value that are offered in lieu of cash)	Total
1.	Personnel	\$62,920		\$62,920
2.	Employee Benefits	\$6,707		\$6,707
3.	Purchased/Contractual Service	\$61,127		\$61,127
4.	Internal Services		\$11,000	\$11,000
5.	Staff Development	\$15,000	\$1,500	\$17,000
6.	Summer Component Activities		\$143,259	\$143,259
7.	Travel	\$11,805	\$6,000	\$17,805
8.	Contractual Services			
9.	Materials and Supplies	\$81,579		\$81,579
10.	Equipment	\$1,667		\$1,667
11.	Educational Software			
B.	Indirect Costs			
1.	Miscellaneous			
	TOTAL	\$234,506	\$161,759	\$396,265

**Appendix A: Richmond City Public Schools and Richmond Technical Center
Planning Team**

Governor's Career and Technical Academy for STEM in Richmond		
Richmond City Public Schools/Richmond Technical Center (RTC) Planning Team		
Staff Name	Title	Role
James Carson	Technical Education Cluster Teacher (RTC)	Developed Engineering and Technology Program
Nelson Colbert	Dual Enrollment Coordinator A/P Coordinator/Retired Science Instructional Specialist	Reviewed curriculum for course alignment, course sequences through Advanced Placement and Dual Enrollment; Student selection criteria; Academy Completion; Met with Partners
Erlene Carter-Dabney	School Counselor (RTC)	Developed course selection guide; reviewed curriculum for course alignment, course sequences
Helena Easter	Science Instructional Specialist	Reviewed curriculum for course alignment, course sequences; Student selection criteria; Academy completion; Met with Partners
Herman Edwards	School Counselor (RTC)	Developed course selection guide; reviewed curriculum for course alignment, course sequences
N. Mauricee Holmes	Principal, Richmond Technical Center (RTC)	Developed pathways, recruited and collaborated with partners, reviewed curriculum for course alignment, course sequences through Advanced Placement and Dual Enrollment; Student selection criteria; Academy Completion; planning and advisory membership
Roger James	Health Sciences Cluster Leader and Instructor (RTC)	Developed Therapeutic Services Program; Student selection criteria; Academy Completion; met with partners
Deborah Kyles	Instructional Specialist, Marketing/Family and Consumer Science	Reviewed curriculum for course alignment, course sequences; Student selection criteria; Academy completion

Victoria Oakley	Director of Instruction	Reviewed curriculum for course alignment, course sequences; student selection criteria; Academy completion; met with partners
Cozette McIntyre	Grants Manager	Reviewed curriculum for course alignment, course sequences; student selection criteria; Academy Completion; met with partners; proposal development; coordination with VDOE
Beverly Mountain	Instructional Specialist, Guidance Services	Reviewed curriculum for course alignment, course sequences; Student selection criteria; Academy Completion; met with partners
Darlene Smith	Instructional Specialist, Business, and ICTS-Telecommunications	Reviewed curriculum for course alignment, course sequences; student selection criteria; Academy completion; met with partners
Jorge Valenzuela	Technology Education and Trade and Industry Specialist	Reviewed curriculum for course alignment, course sequences; student selection criteria; Academy completion; met with partners; PLTW coordination
Audrey Vosburg	Grant Writer	Developed proposal
Kenya Wallach	Mathematics Instructional Specialist	Reviewed curriculum for course alignment, course sequences; Developed summer mathematics programs; Academy completion; met with partners
Charles B. Watson	Career Experiences Coordinator (RTC)	Developed Engineering and Technology Program; reviewed curriculum for course alignment, course sequences; student selection criteria; Academy completion; coordination of partnerships

Appendix B: Program Implementation Timeline

Governor's Career and Technical Academy for STEM in Richmond	
Academy Implementation Timeline	
NOTE: * denotes programs new to RCPS beginning in the summer of 2009	
ACTIVITIES	DATE
Hire a part-time coordinator for the program (Mr. Charles Watson, Career Coordinator, will serve as acting coordinator until the new coordinator is hired)	August 2009
Recruit students Meetings with counselors and principals	March-May 2009
Advisory Council Meeting (quarterly)	May 2009
Summer Professional Development for Teachers PLTW Summer Institute (two weeks)* PLTW School Counselors Conference (middle and high school counselors)* Two weeks of MSIC teacher training ("Engineering" and "Nanotechnology" each)* Science Museum of Virginia	July–August 2009
Summer Experiences for Students: <ul style="list-style-type: none"> ▪ Camp Confidence for students and parents* ▪ VCU Summer Enrichment Day Camp (6th and 7th graders)* ▪ VCU Medical Center Project Health Careers Early Learning Program for 8th graders and parents* ▪ MSIC Camp (five weeks) ▪ VCU Youth Health Services CoRPS (10th graders)* ▪ VCU Project ACEe (11th and 12th graders)* ▪ VCU Acceleration Program* ▪ RCPS Summer Mathematics Program ▪ RAPME ▪ Virtual Worlds (8th graders)* 	June–August 2009
Meet with Community Partners	August 2009
Academy Orientation and Open House for Parents, Partners	August/September 2009
Academic year begins	September 2009
VCU Engineering Department Partnership Activities	September 2009
Advisory Council Meeting	January 2010
Recruit Students for year two of the program	March 2010-April 2010
Academy Orientation Meeting for Parents and incoming Students (year two)	June 2010
Summer Sessions for Students	June 2010-July 2010
Program Closeout/ Reporting	June 2010-August 2010

Appendix C: Planning Committee

<p align="center">Planning Committee Members The Governor's Career and Technical Academy for STEM in Richmond 2008-2009</p>		
Member	Title	Affiliation
Jerry Browder	Staff, Carl Perkins Project	Richmond City Public Schools
James Carson	Technology Instructor	Richmond Technical Center
Earlene Carter-Dabney	Counselor, Guidance	Richmond Technical Center
Nelson Colbert	Dual Enrollment Coordinator/AP Coordinator	Richmond City Public Schools
Dr. Julia M. Cothron	Executive Director	MathScience Innovation Center
Raymond Cousins	Consultant Chair of RTC CTE Advisory Council	Work force Investment Act Consultant
Helena Easter	Science Instructional Specialist	Richmond City Public Schools
Herman Edwards	Counselor, Guidance	Richmond Technical Center
Melvin R. Fleming, Jr.	Senior Project Designer Civil Engineering Consultant	Timmons Group, Inc.
Kavansa Gardner	Director, IT	Richmond City Public Schools
Kevin Harris	Director, Diversity Access Programs Division of Health Careers/Education and Special Services for Students, Medical Center	Virginia Commonwealth University MCV Campus
N. Mauricee Holmes	Principal	Richmond Technical Center
Roger N. James	Health Sciences Cluster Leader	Richmond Technical Center
William James	Instructional Specialist/Health and Physical Education	Richmond City Public Schools
Deborah Kyles	Family Consumer Science, Marketing Education and Health and Medical Sciences Specialist	Richmond City Public Schools

Member	Title	Affiliation
Cozette McIntyre	Grants Manager	Richmond City Public Schools
Beverly Mountain	Instructional Specialist, Guidance	Richmond City Public Schools
Victoria Oakley	Director of Instruction	Richmond City Public Schools
Dr. Gymama Slaughter	Executive Director Richmond Area Program for Minorities in Engineering (RAPME)	Virginia State University
Darlene Smith	Business Instructional Specialist	Richmond City Public Schools
Jorge Valenzuela	Technology Education and Trade and Industry Specialist	Richmond City Public Schools
Audrey Vosburg	Grants Writer	Richmond City Public Schools
Kenya Wallach	Math Instructional Specialist	Richmond City Public Schools
Charles B. Watson	Career Experiences Coordinator	Richmond Technical Center
Ronald Williams	Business Owner (software and laboratory equipment)	Ronald A. Williams, LTD
Willie Williams	Retired Technical Trainer for Philip Morris	Volunteer
Dr. Keith Williamson	Associate Professor and Chair of Engineering and Technology	Virginia State University

Planning Committee Agreement

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Education Academy for STEM in Richmond. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the Academy
5. Assist in the dual enrollment process to establish courses at the high school level as dual enrollment courses.

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

TERRY D. BROWDER
Print

October 3, 2008
Date


Signature

Planning Committee Agreement

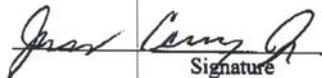
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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

JAMES CARSON, JR.
Print

3/9/09
Date


Signature

Planning Committee Agreement

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Erlene Carter-Dabney
Print

March 8, 2009
Date

Erlene Carter-Dabney
Signature

Planning Committee Agreement

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Nelson L. Colbert
Print

10/3/08
Date

Nelson L. Colbert
Signature

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance (Sports Medicine) and Engineering Systems**

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist the curriculum coordinator in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the academy
5. Assist in the dual enrollment process to establish each course at the high school level as a dual enrollment course*

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance (Sports Medicine) and Engineering Systems.

Maxine Scurra, Innovation Center

10/31/08
Date

Judith M. Cochran, C.D.
Executive Director

10/31/08

*This will be articulated between the community colleges and the high school dual enrollment coordinator.

Planning Committee Agreement

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Helena Easter
Print

10-3-08
Date

Helena Easter
Signature

Planning Committee Agreement

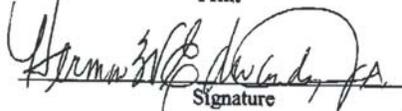
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Herlman W. Edwards, Jr.
Print

3/9/09
Date


Signature

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems**

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems.



8/15/08
Date

*This will be articulated between the community colleges and the high school dual enrollment coordinator.

Planning Committee Agreement

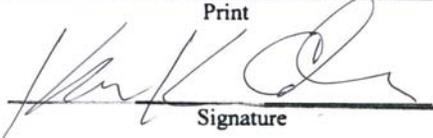
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KAVANSA GARDNER
Print

10/8/08
Date


Signature

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance (Sports Medicine) and Engineering Systems**

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems. As a member of the Planning Committee, I will:

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4. Assist in the evaluation of the programs, courses and overall operation of the academy
5. Assist in the dual enrollment process to establish each course at the high school level as a dual enrollment course*

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance (Sports Medicine) and Engineering Systems.

Mr. G. Nam

10/29/08
Date

Kevin Harris

*This will be articulated between the community colleges and the high school dual enrollment coordinator.

Planning Committee Agreement

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

N. Mauricee Holmes
Print

3/9/09

Date

N. Mauricee Holmes
Signature

Planning Committee Agreement

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NAKIA JAMES
Print

3/9/09
Date


Signature

Planning Committee Agreement

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William James
Print

12/12/08
Date

William James
Signature

Planning Committee Agreement

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Deborah D. Kyles
Print

December 4, 2008
Date

Deborah D. Kyles
Signature

Planning Committee Agreement

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Cozetta G. McIntyre
Print

10/3/07
Date

Cozetta G. McIntyre
Signature

Planning Committee Agreement

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Beverly S. Mountain
Print

10 -15 - 08
Date

Beverly S. Mountain
Signature

Planning Committee Agreement

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By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Victoria S. Oakley
Print

October 2, 2008
Date

Victoria S. Oakley
Signature

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems**

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems. As a member of the Planning Committee, I will:

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4. Assist in the evaluation of the programs, courses and overall operation of the academy
5. Assist in the dual enrollment process to establish each course at the high school level as a dual enrollment course*

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems.



Dr. Gymama Slaughter
Executive Director, RAPME

10/7/2008
Date

*This will be articulated between the community colleges and the high school dual enrollment coordinator.

Planning Committee Agreement

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Education Academy for STEM in Richmond. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the Academy
5. Assist in the dual enrollment process to establish courses at the high school level as dual enrollment courses.

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Darlene Smith
Print

10/15/2008
Date

Darlene Smith
Signature

Planning Committee Agreement

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Education Academy for STEM in Richmond. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the Academy
5. Assist in the dual enrollment process to establish courses at the high school level as dual enrollment courses.

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Jorge Valenzuela
Print

10/24/09
Date


Signature

Planning Committee Agreement

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Education Academy for STEM in Richmond. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the Academy
5. Assist in the dual enrollment process to establish courses at the high school level as dual enrollment courses.

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

Audrey Vosburg

Print

10-3-07

Date

Audrey Vosburg

Signature

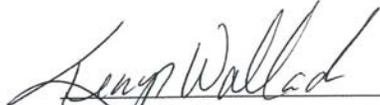
Grant Writer
Richmond Public Schools

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems**

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist the curriculum coordinator in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the academy
5. Assist in the dual enrollment process to establish each course at the high school level as a dual enrollment course*

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems.



Kenya Wallach
RPS Math Instructional Specialist
Richmond Public Schools

July 30, 2008

Date

*This will be articulated between the community colleges and the high school dual enrollment coordinator.

Planning Committee Agreement

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Education Academy for STEM in Richmond. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the Academy
5. Assist in the dual enrollment process to establish courses at the high school level as dual enrollment courses.

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Education Academy for STEM in Richmond.

CHARLES B. WATSON
Print

March 9, 2009
Date

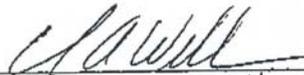
Charles B. Watson
Signature

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems**

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist the curriculum coordinator in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the academy
5. Assist in the dual enrollment process to establish each course at the high school level as a dual enrollment course*

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems.



Ronald A. Williams

7-29-08

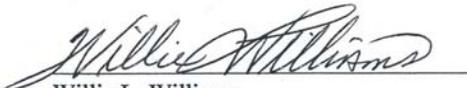
*This will be articulated between the community colleges and the high school dual enrollment coordinator.

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems**

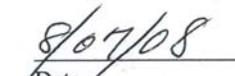
The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist the curriculum coordinator in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the academy
5. Assist in the dual enrollment process to establish each course at the high school level as a dual enrollment course*

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems.



Willie L. Williams
Retired – Philip Morris Technical Trainer



Date

*This will be articulated between the community colleges and the high school dual enrollment coordinator.

**Planning Committee Agreement
Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems**

The Planning Committee is an integral component of the establishment and implementation of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems. As a member of the Planning Committee, I will:

1. Assist in the development of academy goals and objectives
2. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
3. Assist the curriculum coordinator in the alignment of course objectives to the competency based education
4. Assist in the evaluation of the programs, courses and overall operation of the academy
5. Assist in the dual enrollment process to establish each course at the high school level as a dual enrollment course*

By signing this agreement, I certify that I am a willing participant and supporter in the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems.



Dr. Keith Williamson
VSU, Associate Professor and Chair
Engineering & Technology

10/7/2008

Date

*This will be articulated between the community colleges and the high school dual enrollment coordinator.

**Appendix D: Advisory Board and Memoranda of
Agreements**

Advisory Board
The Governor's Career and Technical Academy for STEM in Richmond
2008-2009

Member	Affiliation
Kevin G. Adams Student Activity Director John Marshall High School	Richmond City Public Schools
Joel Adler Interim Dean, School of Nursing and Allied Health	J. Sargeant Reynolds Community College
Nelson Colbert Dual Enrollment Coordinator/AP Coordinator	Richmond City Public Schools
Dr. Judith Cothron Executive Director	MathScience Innovation Center
Raymond Cousins Consultant Chair of RTC Advisory Council	Work force Investment Act Consultant
Jelani Dandles Outreach Coordinator	U-Turn Sports Performance Academy
Harinder S. Dhindsa, MD, MPH Emergency Physician, Director of Division of EMS	Virginia Commonwealth University
Charles Farina Regional Manager	Johnson Controls
Melvin R. Fleming, Jr. Senior Project Designer/Civil Engineering	Timmons Group, Inc.
Alan D. Freedman, MED, ATC Director of Clinical Experiences Athletic Training Education Program	Virginia Commonwealth University
Dr. Oris Griffin Associate Professor	James Madison University

Member	Affiliation
David Hagen Museum Scientist	Science Museum of Virginia
Chris Hicks Community Development Director	YMCA North Richmond
Deirdre Johnson Health Sciences Program Assistant Office of Health Careers/Education and Special Services for Students	Virginia Commonwealth University
Jacqueline Johnson-Curl, D.D.S. Dentist	Jacqueline Johnson-Curl, D.D.S. Family Dentistry
Dr. Laurie Keating Vice President Technology Research and Planning	Center for Educational Learning Technology (CELT)
Thomas P. Loughran, MD Medical Director of VCU Sports Medicine Center	Virginia Commonwealth University
Eugene Maurakis Director of Science Education	Science Museum of Virginia
Dr. Roland Moore Dean, School of Mathematics and Science	J. Sargeant Reynolds Community College
Victoria Oakley Director, Department of Instruction	Richmond City Public Schools
Dr. Lorraine Parker Associate Professor Computer Science Department	Virginia Commonwealth University
Dr. Gregory Pleasants Physician	Parham Road Internal Medicine
Jackie Pryor President	Black Data Processing Associates

Member	Affiliation
Vaughn Quash Owner/Proprietor	Quastar, LLC
Stefanie Ramsey Department Head	Richmond City Public Schools
C. Brandon Ream, MPT, CSCS Director of Physical Therapy	Virginia Sports Medicine and Physical Therapy
Renee Reid, MD Emergency Physician Director of Quality Assurance Division	Virginia Commonwealth University
Dr. John M. Ritz Professor and Chair Occupational and Technical Studies	Old Dominion University
Dr. Gymana Slaughter Executive Director	Richmond Area Program for Minorities in Engineering (RAPME) Virginia State University
Ron Tracey Campus Director	ECPI College of Technology
Ronald A. Williams President	Ronald A. Williams, LTD Electronic and Technology Resources
Willie L. Williams Retired Technical Trainer Philip Morris USA	Volunteer
Dr. Keith Williamson Associate Professor Chair of Engineering and Technology	Virginia State University

MEMORANDUM OF AGREEMENT
 Between
Richmond Technical Center/Richmond Public Schools
 And
The Governor's Career and Technical Academy
For STEM

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified partner for the purpose of establishment, implementation and sustainability of the Academy. The focus of the Governor's Career and Technical Education Academy for STEM in Richmond is to offer Richmond Public Schools' (RPS) students a solid education in science, technology, engineering and mathematics (STEM), along with critical skills needed to succeed in a digital, global economy. A rigorous academic and technical program of study in two career pathways will prepare students for a full range of postsecondary opportunities (two- and four year colleges), formal employment training, apprenticeships, and the military. Each pathway, Engineering and Therapeutic Services, has been designed to lead students to opportunities in high-skill, high-wage, high-demand employment areas.

RTC/RPS PARTNERS AGREE TO:

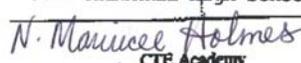
1. Assist in the development and implementation of strategies for teacher professional development programs.
2. Provide work-based learning experiences that will include but are not limited to cooperative education, job shadowing, project-based learning, internships, mentoring and service-learning opportunities.
3. Provide or assist in the procurement of instructional and professional development resources.
4. Share Academy information with other business leaders and organizations to recruit additional partners and SPONSORS.
5. Assist in developing and implementing strategies for the recruitment and enrollment of non-traditional and minority students.
6. Provide information to be used for reporting and evaluation of programs, courses and the overall operation of the Academy.
- 7.

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the Governor's Career and Technical Academy for STEM in Richmond Public Schools-Richmond Technical Center.
2. Offer courses related to healthcare and engineering sciences.
3. Hire certified instructors, graduate students for fellowship teaching and/or guest lecturers.
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcome are consistent with the program's vision and purpose of the academy.


 Partner
 Kevin G. Adams, Athletic Director
 John Marshall High School

26 May 09
 Date


 N. Maurice Holmes
 CTE Academy

5-26-09
 Date

MEMORANDUM OF AGREEMENT
Between
Richmond Technical Center/Richmond Public Schools
And
The Governor's Career and Technical Academy
For STEM In Richmond Public Schools- Richmond Technical Center

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified partner for the purpose of establishment, implementation and sustainability of the Academy. The focus of the Governor's Career and Technical Education Academy for STEM in Richmond is to offer Richmond Public Schools (RPS) students a solid education in science, technology, engineering and mathematics (STEM), along with the critical skills needed to succeed in a digital, global economy. A rigorous academic and technical program of study in two career pathways will prepare students for a full range of postsecondary opportunities (two- and four year colleges), formal employment training, apprenticeships, and the military. Each pathway, Engineering and Therapeutic Services, has been designed to lead students to opportunities in high - skill, high - wage, high- demand employment areas

RTC/RPS PARTNERS AGREE TO:

1. Assist in the development and implementation of strategies for teacher professional development programs.
2. Provide work-based learning experiences that will include but are not limited to cooperative education, job shadowing, project-based learning, internships, mentoring and service learning opportunities.
3. Provide or assist in the procurement of instructional and professional development resources.
4. Assist in the development and implementation of strategies for teacher professional development programs.
5. Share Academy information with other business leaders and organizations to recruit additional partners and sponsors.
6. Assist in developing and implementing strategies for the recruitment and enrollment of non- traditional and minority students.
7. Provide information to be used for reporting and evaluation of programs, courses and the overall operation of the Academy.

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the **Governor's Career and Technical Academy For STEM in Richmond Public Schools- Richmond Technical Center**
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, **graduate students for fellowship teaching and/or guest lecturers**
4. Conduct on-going evaluation of the Academy to make sure that the delivery methods and outcomes are consistent with the program's vision and purpose.


 Interim DEAN, School of NURSING &
 Partner ALLIED HEALTH
 J.S. Reynolds

4-14-09
 Date


 CTE Academy

4-14-09
 Date

MEMORANDUM OF AGREEMENT
Between
Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
For STEM in Richmond Public Schools at the Richmond Technical Center

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified partner for the purpose of establishment, implementation and sustainability of the Academy. The focus of the Governor's Career and Technical Education Academy for STEM in Richmond is to offer Richmond Public Schools (RPS) students a solid education in science, technology, engineering and mathematics (STEM), along with the critical skills needed to succeed in a digital, global economy. A rigorous academy and technical program of study in two career pathways will prepare students for a full range of postsecondary opportunities (two-and four year colleges), formal employment training, apprenticeships, and the military. Each pathway, Engineering and Therapeutic Services, has been designed to lead students to opportunities in high – skill, high- wage- demand employment areas.

RTC/ RPS PARTNERS AGREE TO:

1. Assist in the development and implementation of strategies for teacher professional development programs.
2. Provide or assist in the procurement of instructional and professional development resources.
3. Provide work-based learning experiences that will include but are not limited to cooperative education, job shadowing, project-based learning, internships, mentoring and service learning opportunities.
4. Share Academy information with other business leaders and organizations to recruit additional partners and sponsors.
5. Assist in developing and implementing strategies for the recruitment and enrollment of non-traditional and minority students.
6. Provide information to be used for reporting and evaluation of programs, courses and the overall operation of the Academy.

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the Governor's Career and Technical Academy for STEM in Richmond Public Schools at the Richmond Technical Center
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, graduate students for fellowship teaching and/or guest lecturers
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcomes are consistent with program's vision and purpose.

Nelson Colbert
 AP/Dual Enrollment,
 Coordinator

6/2/09
 Date

N. Maurice Holmes/cwt
 Principal, CTE Academy

6-2-09
 Date

MEMORANDUM OF AGREEMENT
Between
Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
For STEM in Richmond Public Schools at the Richmond Technical Center

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RTC/ RPS PARTNERS AGREE TO:

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5. Assist in developing and implementing strategies for the recruitment and enrollment of non-traditional and minority students.
6. Provide information to be used for reporting and evaluation of programs, courses and the overall operation of the Academy.

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the Governor's Career and Technical Academy for STEM in Richmond Public Schools at the Richmond Technical Center
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, graduate students for fellowship teaching and/or guest lecturers
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcomes are consistent with program's vision and purpose.

Julia H. Cochran
 Executive Director
 Math Science Innovation Center
 N. Maurice Holmes /CT
 Principal, CTE Academy

June 2, 2009
 Date

6-2-09
 Date

MEMORANDUM OF AGREEMENT
Between
Richmond Technical Center/Richmond Public Schools
And
The Governor's Career and Technical Education Academy for STEM in Richmond

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified Governor's Career and Technical Academy for Health and Human Performance Engineering Systems partners for the purpose of serving as the steering and program development committee for the establishment of the Governor's Career and Technical Academy for Health and Human Performance (Sports Medicine) and Engineering Systems.

The major focus of this Academy is on inspiring students with the qualities of creativity, innovation, inquisitiveness, and concernment to address the healthcare needs and the development of devices and procedures that solve medical and health-related problems. The Academy will provide instruction ranging from health care terminology, sports medicine careers to the principles and transfers of technology, and the engineering design, testing and manufacturing of devices, apparatus, and equipment used in the healthcare industry.

RTC/RPS PARTNERS AGREE TO:

1. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
2. Provide guidance in the development of the curriculum and course offerings;
3. Provide work-base learning experiences that would include but not limited to cooperative education, job shadowing, project-based learning, internships and service learning opportunities when appropriate for students; and
4. Assist in the evaluation of the programs, courses and overall operation of the academy

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems;
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, graduate students for fellowship teaching and/or guest lecturers
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcome are consistent with the program's vision and purpose of the academy.



3/5/09
Date

N. Maurice Holmes

3/5/09

MEMORANDUM OF AGREEMENT
 Between
Richmond Technical Center/Richmond Public Schools
 And
The Governor's Career and Technical Academy
 For STEM

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RTC/RPS PARTNERS AGREE TO: *

1. Assist in the development and implementation of strategies for teacher professional development programs.
2. Provide work-based learning experiences that will include but are not limited to cooperative education, job shadowing, project-based learning, internships, mentoring and service-learning opportunities.
3. Provide or assist in the procurement of instructional and professional development resources.
4. Share Academy information with other business leaders and organizations to recruit additional partners and sponsors.
5. Assist in developing and implementing strategies for the recruitment and enrollment of non-traditional and minority students.
6. Provide information to be used for reporting and evaluation of programs, courses and the overall operation of the Academy.
- 7.

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinates the curriculum development of the Governor's Career and Technical Academy for STEM in Richmond Public Schools-Richmond Technical Center.
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, graduate students for fellowship teaching and/or guest lecturers;
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcome are consistent with the program's vision and purpose of the academy.

*
Johanna L. ... *
 Partner U-TURN

5-26-09
 Date

N. Marriace Holmes

5-26-09

CTE Academy

Date

*Willingness to explore developing activities.
 JP **Please see attached addendum.



May 26, 2009

Addendum:

U-TURN will agree to the contents of the attached document contingent upon receiving more details within the next 2 years on the Governor's Career and Technical Academy For STEM. Further details are included but not limited to: U-TURN's time commitment, financial needs, and staff requirements.

Warmest Regards,

Jelani Dandles
Director of Outreach
U-TURN Sports Performance Academy

MEMORANDUM OF AGREEMENT
Between
Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
For STEM in Richmond Public Schools at the Richmond Technical Center

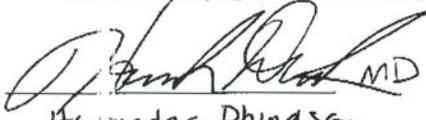
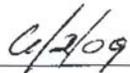
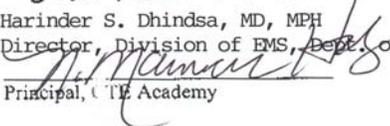
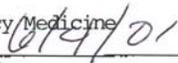
The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified partner for the purpose of establishment, implementation and sustainability of the Academy. The focus of the Governor's Career and Technical Education Academy for STEM in Richmond is to offer Richmond Public Schools (RPS) students a solid education in science, technology, engineering and mathematics (STEM), along with the critical skills needed to succeed in a digital, global economy. A rigorous academy and technical program of study in two career pathways will prepare students for a full range of postsecondary opportunities: (two- and four-year colleges), formal employment training, apprenticeships, and the military. Each pathway, Engineering and Therapeutic Services, has been designed to lead students to opportunities in high-skill, high-wage-demand employment areas.

RTC/ RPS PARTNERS AGREE TO:

1. Assist in the development and implementation of strategies for teacher professional development programs.
2. Provide or assist in the procurement of instructional and professional development resources.
3. Provide work-based learning experiences that will include but are not limited to cooperative education, job shadowing, project-based learning, internships, mentoring and service learning opportunities.
4. Share Academy information with other business leaders and organizations to recruit additional partners and sponsors.
5. Assist in developing and implementing strategies for the recruitment and enrollment of non-traditional and minority students.
6. Provide information to be used for reporting and evaluation of programs, courses and the overall operation of the Academy.

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the Governor's Career and Technical Academy for STEM in Richmond Public Schools at the Richmond Technical Center
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, graduate students for fellowship teaching and/or guest lecturers
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcomes are consistent with program's vision and purpose.

 Harinder Dhindsa Harinder S. Dhindsa, MD, MPH Director, Division of EMS, Dept. of Emergency Medicine	 Date <u>6/2/09</u>
 Principal, CTE Academy	 Date <u>6/9/09</u>

MEMORANDUM OF AGREEMENT
Between
Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems Partners

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified Governor's Career and Technical Academy for Health and Human Performance Engineering Systems partners for the purpose of serving as the steering and program development committee for the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering System.

The major focus of this Academy is on inspiring students with the qualities of creativity, innovation, inquisitiveness and concernment to address the healthcare needs and the development of devices and procedures that solve medical and health-related problems. The Academy will provide instruction ranging from health care terminology, sports medicine careers to the principles and transfers of technology, and the engineering design, testing and manufacturing of devices, apparatus, and equipment used in the healthcare industry.

PARTNERS AGREE TO:

1. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
2. Depending upon the availability of resources, Johnson Controls, Inc., will make reasonable efforts to provide guidance in the development of the curriculum and course offerings;
3. Depending upon the availability of resources, Johnson Controls, Inc., will make reasonable efforts to provide work-based learning experiences that would include but not limited to cooperative education, job shadowing, project-based learning, internships and service learning opportunities when appropriate for students; and
4. Assist in the evaluation of the programs, courses and overall operation of the Academy

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the Governor's Career and Technical Academy for Health and Human Performance Engineering Systems;
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, graduate students for fellowship teaching and/or guest lecturers
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcome are consistent with the program's vision and purpose of the Academy.

Charl J. Jamieson - RSM
Johnson Controls, Inc.
 Partner

5/27/09
 Date

N. Maricee Holmes /CT
CTE Academy

5-27-09
 Date

MEMORANDUM OF AGREEMENT
Between
Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
For STEM in Richmond Public Schools at the Richmond Technical Center

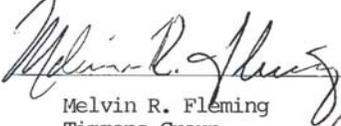
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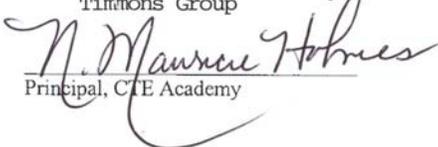
RTC/ RPS PARTNERS AGREE TO:

1. Assist in the development and implementation of strategies for teacher professional development programs.
2. Provide or assist in the procurement of instructional and professional development resources.
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 Melvin R. Fleming
 Timmons Group


 N. Maurice Holmes
 Principal, CTE Academy

Date 6/2/09

Date 6/3/09

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Alan D. Freedman

Alan D. Freedman, Director
 Clinical Experiences, Athletic Training Education
 Virginia Commonwealth University

6/3/09
 Date

Maurice H. H.
 Principal, CTE Academy

6/4/09
 Date

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Oris J Griffin
 Partner

May 27, 2009
 Date

Maurice Holmes

5/27/09

CTE Academy

Date

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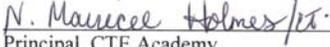
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 Museum Scientist
 Science Museum of Virginia

Date

June 2, 2009


 Principal, CTE Academy

Date

6-2-09

MEMORANDUM OF AGREEMENT
 Between
 Richmond Technical Center/Richmond Public Schools
 And
 The Governor's Career and Technical Academy
 For STEM

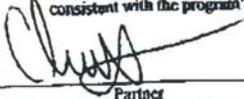
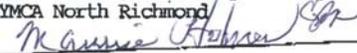
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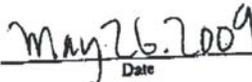
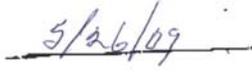
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 Partner
 Chris Hicks, Community Development Director
 YMCA North Richmond


CTE Academy


 Date

 Date

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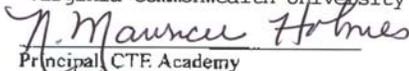
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Deidre A. Johnson
 Virginia Commonwealth University

6-3-09
 Date


 Principal, CTE Academy

6-3-09
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Jacqueline Johnson
 Partner

5/26/09
 Date

N. Maurice Ffaly
 CTE Academy

5/26/09
 Date

MEMORANDUM OF AGREEMENT
Between
Richmond Technical Center/Richmond Public Schools
And
The Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems Partners

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified Governor's Career and Technical Academy for Health and Human Performance Engineering Systems partners for the purpose of serving as the steering and program development committee for the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering System.

The major focus of this Academy is on inspiring students with the qualities of creativity, innovation, inquisitiveness, and concernment to address the healthcare needs and the development of devices and procedures that solve medical and health-related problems. The Academy will provide instruction ranging from health care terminology, sports medicine careers to the principles and transfers of technology, and the engineering design, testing and manufacturing of devices, apparatus, and equipment used in the healthcare industry.

PARTNERS AGREE TO:

1. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
2. Provide guidance in the development of the curriculum and course offerings;
3. Provide work-base learning experiences that would include but not limited to cooperative education, job shadowing, project-based learning, internships and service learning opportunities when appropriate for students; and
4. Assist in the evaluation of the programs, courses and overall operation of the academy

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Laura Keating, Ed D

5/27/2009
Date

Maurice Johnson

5/27/09

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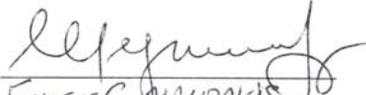
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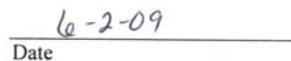
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 EUGENE G. MURAKIS
 Dir. Science Education
 Science Museum of VA.
 N. Maurice Holmes/CTA
 Principal, CTE Academy


 Date


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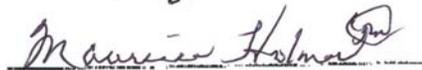
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5/27/09
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Victoria D. Oddy
 Director of Instruction

June 2, 2009
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 Principal, CTE Academy

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L. M. Parker
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 VCU Computer Science

6/3/09
 Date

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 Principal, CTE Academy

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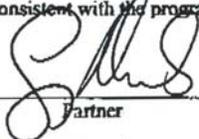
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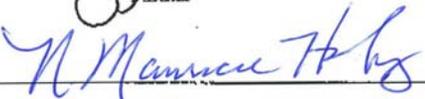
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 Partner

5/26/09

 Date



 CTE Academy

5/26/09

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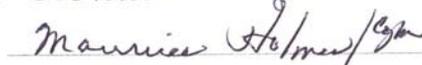
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 Partner
 Back Data Processing Associates

5/26/09
 Date



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The Governor's Career and Technical Academy
For STEM

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified partner for the purpose of establishment, implementation and sustainability of the Academy. The focus of the Governor's Career and Technical Education Academy for STEM in Richmond is to offer Richmond Public Schools' (RPS) students a solid education in science, technology, engineering and mathematics (STEM), along with critical skills needed to succeed in a digital, global economy. A rigorous academic and technical program of study in two career pathways will prepare students for a full range of postsecondary opportunities (two- and four year colleges), formal employment training, apprenticeships, and the military. Each pathway, Engineering and Therapeutic Services, has been designed to lead students to opportunities in high-skill, high-wage, high-demand employment areas.

RTC/RPS PARTNERS AGREE TO:

1. Assist in the development and implementation of strategies for teacher professional development programs.
2. Provide work-based learning experiences that will include but are not limited to cooperative education, job shadowing, project-based learning, internships, mentoring and service-learning opportunities.
3. Provide or assist in the procurement of instructional and professional development resources.
4. Share Academy information with other business leaders and organizations to recruit additional partners and sponsors.
5. Assist in developing and implementing strategies for the recruitment and enrollment of non-traditional and minority students.
6. Provide information to be used for reporting and evaluation of programs, courses and the overall operation of the Academy.
- 7.

RICHMOND TECHNICAL CENTER/RICHMOND PUBLIC SCHOOLS AGREES TO:

1. Coordinate the curriculum development of the **Governor's Career and Technical Academy for STEM in Richmond Public Schools-Richmond Technical Center.**
2. Offer courses related to healthcare and engineering sciences;
3. Hire certified instructors, **graduate students for fellowship teaching and/or guest lecturers;**
4. Conduct on-going evaluation of the academy to make sure that the delivery methods and outcome are consistent with the program's vision and purpose of the academy.


 Partner
 Quasar, LLC


 Date

CTE Academy

Date

MEMORANDUM OF AGREEMENT
Between
Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
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Date

6/4/09


Principal, CTE Academy

Date

6/4/09

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C. Brandon Ream
 Partner

5/27/09
 Date

Maurice Johnson
 CTE Academy

5/27/09
 Date

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Between
Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
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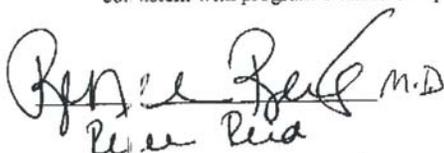
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 M.D.
 Renee Reid

Renee Reid, M.D.
 Emergency Physician
 Principal, CTE Academy

6/2/09
 Date

6/4/09
 Date

**Richmond Technical/Richmond Public Schools
And
The Governor's Career and Technical Academy
For STEM in Richmond Public Schools at the Richmond Technical Center**

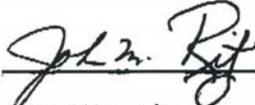
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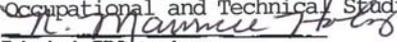
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 John Ritz, Ph.D
 Professor and Chair, Old Dominion University
 Occupational and Technical Studies


 Principal, CTE Academy

6-3-09

 Date

6/3/09

 Date

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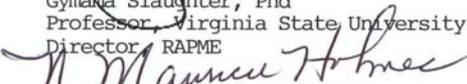
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 Gymana Slaughter, PhD
 Professor, Virginia State University
 Director, RAPME


 Maurice Holmes
 Principal, CTE Academy

6/2/09
 Date

6/3/09
 Date

MEMORANDUM OF AGREEMENT
 Between
Richmond Technical Center/Richmond Public Schools
 And
The Governor's Career and Technical Academy
For Health and Human Performance Engineering Systems Partners
 Date: _____

The Richmond Technical Center/Richmond Public Schools hereby enters into this Memorandum of Agreement with the identified Governor's Career and Technical Academy for Health and Human Performance Engineering Systems partners for the purpose of serving as the steering and program development committee for the establishment of the Governor's Career and Technical Academy for Health and Human Performance Engineering System.

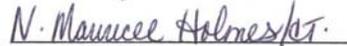
The major focus of this Academy is on inspiring students with the qualities of creativity, innovation, inquisitiveness, and concernment to address the healthcare needs and the development of devices and procedures that solve medical and health-related problems. The Academy will provide instruction ranging from health care terminology, sports medicine careers to the principles and transfers of technology, and the engineering design, testing and manufacturing of devices, apparatus, and equipment used in the healthcare industry.

PARTNERS AGREE TO:

1. Identify the needs of the healthcare, engineering and related services industries of the state of Virginia;
2. Provide guidance in the development of the curriculum and course offerings;
3. Provide work-base learning experiences that would include but not limited to cooperative education, job shadowing, project-based learning, internships and service learning opportunities when appropriate for students; and
4. Assist in the evaluation of the programs, courses and overall operation of the academy

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 Ron Tracy
 Campus Director of Technology
 ECPI Technical College of Technology


Date 8/7/08

 8/7/08

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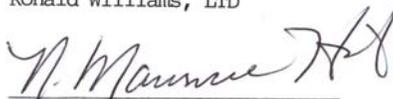
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 Ronald Williams, LTD

6-4-2009

 Date



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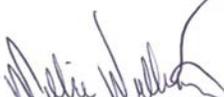
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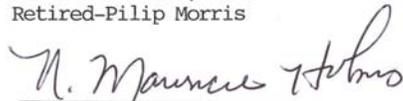
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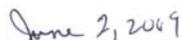
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 Willie Williams, Technical Trainer
 Retired-Pilip Morris


 Principal, CTE Academy


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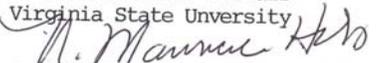
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 Keith Williamson, Ph.D
 Assoc. Professor & Chair
 Virginia State University

 Principal, CTE Academy

6-9-2009
 Date

6/3/09
 Date

Appendix E: Dual Enrollment Contract

Dual Enrollment Contract
2009 - 2011
Between
J. Sargeant Reynolds Community College
and
Richmond City Public Schools

The purpose of this agreement is to set out the terms and conditions upon which courses will be offered under the "Virginia Plan for Dual Enrollment Between Virginia Public Schools and Community Colleges" established by the Secretary of Education, the VCCS Chancellor, and the Superintendent of Public Instruction in January 2005. The purpose of this offering is to allow high school students to take college-level courses and receive both college credit and high school credit towards graduation.

Each party does hereby agree to the following:

1. Under this agreement, J. Sargeant Reynolds Community College (College) will make available college-level courses to students of Richmond City Public Schools (School Division) for the 2009 – 2010 and 2010 – 2011 academic years.

The courses to be offered will be established in advance of each academic year for the fall and spring semesters by mutual agreement of both parties.

This agreement is tentative until registration for the course(s) is completed and is subject to adequate student enrollment as determined by the College. The College and School Division reserve the right, by mutual agreement of both parties, to cancel any class sections or add sections in advance of each academic year.

2. Tuition & Fees

Rates for tuition will be in accordance with rates established by the State Board for Community Colleges and in effect at the time the classes begin. Fees will be in accordance with fees established by the State Board for Community Colleges and the J. Sargeant Reynolds Community College Board for the applicable term.

If the School Division assumes responsibility for the payment of tuition and fees for the student, the School Division will, prior to registration, identify the students to be sponsored, including the students' full names, student identification number, and college course prefix and number. The College will issue an invoice to the School Division after the census date, which is designated as the end of the period when students may add or drop the class without penalty. Full tuition and fees are due for students who do not drop their classes by the drop deadline (census date). Payment is due from the School Division within thirty (30) days of the date of the invoice.

If the student is responsible for payment of tuition and fees, payment is due at registration. Payment may be made by check, MasterCard, Visa, Discover, or cash.

3. Textbooks

The College determines the textbooks used in dual enrollment courses. The provision of all dual enrollment course textbooks is the responsibility of the student, unless the School Division elects to provide textbooks. Required textbooks will be available for purchase from the college's bookstore.

4. Payment for Other Services

Payment or reimbursement for other costs and services will be determined by written mutual consent of the School Division and the College.

Revised 5-6-2009 TCB

Page 1

Richmond City Public Schools
Dual Enrollment Contract

5. Faculty

a. Selection

(1) Authority to Select/Hire

The selection and supervision of instructional faculty for all community college courses covered by this agreement will be the responsibility of the College and shall meet the requirements of Title 22.1, Chapter 15, Article 2 of the Code of Virginia as amended. The School Division may recommend qualified teachers who are interested in teaching in the dual enrollment program to the College for consideration. Each faculty member teaching in the dual enrollment program shall be a member of the college's full- or part-time faculty or an employee of the school division.

(2) Dual enrollment course faculty must meet the minimum credential requirements set forth by Form VCCS-29 (Attachment 1) and the Southern Association of Colleges and Schools.

b. Payment

If the instructor for dual enrollment course(s) is employed full time by the school division and the course(s) are part of the assigned teaching workload, the College will reimburse the School Division for the services of its employee in lieu of direct compensation to the faculty member. Reimbursement will be made based on the college's actual adjunct faculty per credit hour rate times the number of credits of the course(s) taught. The actual adjunct faculty per credit hour rate will be calculated annually based on the prior year's actual adjunct expenditures. Reimbursement will occur no later than the end of the semester of the course.

If, however, the College employs an instructor that is not affiliated with the School Division, the College will compensate the faculty member directly. Payment of faculty salaries will be in accordance with the Virginia Community College System approved adjunct faculty rates depending on qualifications of the instructor. Payment will occur no later than the end of the semester of the course.

c. Faculty Responsibilities

Instructors will be expected to conform to college policies, including but not limited to, preparing course syllabi, verifying class rosters, reporting student progress to the college, taking attendance, and providing final grades at the end of the semester.

All faculty teaching dual enrollment courses will be required to attend faculty orientation and other in-service programs as agreed upon by both parties.

6. Students

a. Selection and Eligibility to Participate in Dual Enrollment Program

(1) In order to be eligible to participate in the Dual Enrollment Program, high school students must be high school juniors or seniors, have permission of their parent or guardian, be recommended by their high school principal (or designee) to cross register, and meet course prerequisites. High school freshmen and sophomores will be considered on a case by case basis as noted in 6.a.(3) below.

(2) Students must meet admission and course placement requirements of the college. Requirements for admission include the completion of an application for admission to the college, course request

Richmond City Public Schools
Dual Enrollment Contract

forms, residency forms, and the completion and receipt of satisfactory scores on the college's placement tests when required.

- (3) Exceptions to the policies established in 6.a.(1) and 6.a.(2) regarding student eligibility may be made on a case-by-case basis with the approval of the School Division superintendent and the College president.

7. College Administrative Responsibilities

- a. The College, through its instructor(s), will provide the appropriate School Division officials with progress reports on each student as agreed by the contracting School Division and College. Release of progress reports by the College shall be conditional upon receipt of a proper authorization for the release of grades by the College to the School Division conforming to the requirements of the US DOE FERPA regulations. At the conclusion of each college academic term, the student will receive a college grade for each course in which he/she was registered and such grades will become part of the student's permanent college record.
- b. A record will be maintained by the College for each student in the Dual Enrollment Program as a part of the permanent college record maintained by the college's Admissions and Records office. Transcripts will be sent to colleges/universities upon student request.
- c. The College will provide a minimum of 800 minutes of instruction (to include testing and evaluation) for each lecture credit or lab contact hour per semester to school division students enrolled in college courses under this agreement.

8. High School Administrative Responsibilities

The School Division will verify enrollments in each class section, and instructors will report grades to the College within a prescribed period of time, according to mutually agreed-upon procedures. The School Division shall not establish dual enrollment classes with a "mix" of dual enrollment and non-dual enrollment students.

9. Award of Credit

College and high school credit shall be awarded to the participating high school student upon successful completion of the course.

10. Course Standards

a. Course Equivalency, Evaluation, and Assessment

Assessment has long been recognized in Virginia as an important aspect of an effective instructional program. In this spirit, all dual enrollment arrangements developed and implemented under the auspices of the Virginia Plan for Dual Enrollment shall include a formal mechanism for evaluation. The College has the responsibility to ensure that all dual enrollment courses taught are equivalent to other instruction offered by the college, specifically in terms of course objectives, components of the syllabi, level and rigor of content, evaluation of students, textbooks, student outcomes and assessment and faculty evaluation.

b. Modifications of Policies

Modifications of on-campus policies, procedures, and rules appropriate to the high school setting may be agreed to by the parties in writing before each term begins.

Richmond City Public Schools
Dual Enrollment Contract

c. Student Performance

The College reserves the right to: (1) advise the student, parents, and school division that the student does not have sufficient skills or abilities to continue in the courses selected after the first semester, or (2) determine that a student cannot enroll in a subsequent course.

11. Agreement Contacts

Contact persons for this agreement are:

- the School Division: _____
- the School: _____
- the College: Director of Outreach and Recruitment, 804-523-5935
Vice-President of Finance and Administration, 804-523-5132

12. Transferability

Normally, academic courses intended for transfer with a grade of "C" or above will transfer to institutions of higher education. However, no guarantee can be made regarding transferability to all colleges and universities. Community college occupational/technical course credits earned are applicable to specific curricula and are intended to prepare students for employment in those areas. While some of these courses may be accepted for transfer, students should be advised to consult with transfer institutions in order to determine if their courses will be accepted for transfer.

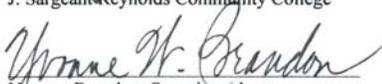
- 13. The College reserves the right to enroll other students when courses are offered on campus or sites not at the high school.
- 14. Each party will be responsible for liability coverage of its employees and agents in fulfilling its responsibilities under this agreement, to the extent authorized by law.
- 15. If either party wishes to terminate this agreement, a written notice must be provided within 90 days of the requested termination date. Termination will not take place until dual enrollment courses in progress are completed.
- 16. The College or the School Division shall not unlawfully discriminate on the basis of race, nationality, ethnicity, religion, gender, age, or disability in any undertaking pursuant to this agreement.
- 17. Nothing herein shall be construed as a waiver of the sovereign immunity of the Commonwealth of Virginia or the assumption of any liability contrary to the laws and statutes of Virginia.

Signatures:



Gary L. Rhodes, President
J. Sargeant Reynolds Community College

Date: 5/7/09



Yvonne Brandon, Superintendent
Richmond City Public Schools

Date: 5/17/09

Appendix F: Academy Plan(s) of Study



Governor's Career and Technical Academy for STEM in Richmond Plan of Study

Student Name: _____
School: _____
Date: _____

Cluster: Science, Technology, Engineering, and Mathematics

Pathway: Engineering and Technology

This Career Pathway Plan of Study serves as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended and individualized to meet each learner's educational and career goals.

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses Source: Administrative Planning Guide www.doe.virginia.gov/VDOE/ Instruction/CTE/apg/	Occupations Relating to This Pathway: www.doe.virginia.gov/VDOE/ Instruction/CTE/careerclusters/ www.careerclusters.org www.cteresource.org/cpg/
MIDDLE	6	6 English 6H English 7A English	6 Mathematics 6H Mathematics 7A Mathematics	6 Science 6H Science 7A Life Science	6 U.S. History I 6H US History I	Keyboarding Comp. Applications Exploratory Foreign Language	Introduction to Technology (VDOE 8482)	<u>Occupations Requiring Less than a Baccalaureate Degree:</u> <ul style="list-style-type: none"> ▪ Civil Engineering Technicians • Electrical and Electronic Technicians • Industrial Engineering Technicians • Environmental Engineering Technicians • Electro-mechanical Technicians • Aerospace Engineering and Operations Technicians
	7	7 English 7H English 8A English	7 Mathematics 7H Mathematics 7A Mathematics 8A Pre Algebra 9A Algebra I (VDOE 3130)	7 Life Science 7H Life Science 8A Physical Science	7 US History II 7H US History II	Foreign Language Keyboarding Computer Solutions Health and Physical Education	Inventions and Innovations (VDOE -8464)	
	8	8 English 8H English 9A English (VDOE 1130)	8 Pre Algebra 8H Pre Algebra 9A Algebra I (VDOE 3130) 10A Geometry (VDOE 3143)	8 Physical Science 8H Physical Science 9A Earth Science (VDOE 4210) 10A Biology (VDOE 4310)	8 Civics and Economics 8H Civics and Economics	Foreign Language Keyboarding Applications (VDOE 6152) 1 CR Health and Physical Education	Technological Systems (VDOE 8462) Career Investigations (VDOE 9070) <u>"Gateway to Technology Program": Project Lead the Way (PLTW)</u> -Science and Technology (9wks) -Design and Modeling (9wks) -Magic of Electrons (9wks) -Automation and Robotics (9wks)	

SECONDARY	9	9 English (VDOE 1130)	9 Integrated Math I (VDOE 3131)	Integrated Science I (VDOE 4211)	World Geography (VDOE 2210)	Foreign Language	<u>Pathway to Engineering Program PLTW</u> Principles of Engineering (VDOE 8441), 1CR or Introduction to Engineering Design, (VDOE 8439) 1CR and Digital Visualization (VDOE 8459) 1 CR	<u>Occupations Requiring a Baccalaureate Degree</u> <ul style="list-style-type: none"> • Civil Engineer • Mechanical Engineer • Industrial Engineer • Electrical Engineer • Electronic Engineer • Aerospace Engineer • Computer Hardware Engineer • Environmental Engineer • Nuclear Engineer • Chemical Engineer • Materials Engineer • Agricultural Engineer • Biomedical Engineer
		9H English (VDOE 1130)	9 Integrated Math II (VDOE 3132)	Earth Science (VDOE 4210)	H World Geography (VDOE 2210)	9 Health and Physical Education (VDOE 7300)		
		10A English (VDOE 1140)	9 Algebra I (VDOE 3130)	H Earth Science (VDOE 4210)	World History and Geography I to 1500 AD (VDOE 2341)			
			9H Algebra I (VDOE 3130)	Biology (VDOE 4310)	H World History and Geography I to 1500 AD (VDOE 2341)			
			10A Geometry (VDOE 3143)	10A Biology (VDOE 4310)		10 Health and Physical Education (VDOE 7400)		
			11A Algebra II/ Trig (VDOE 3137)					

	10	10 English (VDOE 1140)	9 Integrated Math II (VDOE 3132)	Integrated Science II (VDOE 4311)	World History and Geography I to 1500 AD (VDOE 2341)	Foreign Language	Principles of Engineering (VDOE 8441), 1 CR
		10H English (VDOE 1140)	10 Geometry I (VDOE 3144)	Biology (VDOE 4310)	H World History and Geography to 1500 AD (VDOE 2341)	Fine Arts Elective	or
		11A English (VDOE 1150)	10 Geometry II (VDOE 3145)	Biology Part I (VDOE 4300)	World History and Geography II to 1500 AD to Present (VDOE 2341)	AP Fine Arts Courses	Introduction to Engineering Design, (VDOE 8439) 1 CR
			10 Geometry (VDOE 3143)	H Biology (VDOE 4310)			and
			10H Geometry (VDOE 3143)	Chemistry (VDOE 4410)	H World History and Geography II to 1500 AD to Present (VDOE 2341)		Digital Electronics (VDOE 8440) 1 CR
			11A Algebra II (VDOE 3135)	11A Chemistry (VDOE 4410)			
			11A Algebra II/ Trig (VDOE 3137)				
			12A Math Analysis (VDOE 3162)				
Career Assessment: Explorer, Pre-ACT and Career Cruising							

<p>11</p>	<p>11 English (VDOE 1150) 11H English (VDOE 1150) 12A English (VDOE 1160) 13AP English Literature (VDOE 1195) 13AP English Language (VDOE 1195) College Composition I (DE/ENG 111) 3CR (VDOE 1195) College Composition II (DE/ ENG 112) 3CR (VDOE 1195)</p>	<p>10 Geometry II (VDOE 3145) 10 Geometry (VDOE 3143) 11 Algebra II (VDOE 3135) 11H Algebra II (VDOE 3135) 11 Algebra II/ Trig (VDOE 3137) 12A Math Analysis (VDOE 3162) 13AP Statistics (VDOE 3192) 13AP Calculus (VDOE 3177) Pre Calculus (DE/ MTH 163) 3CR VDOE 3162 Calculus I (DE/ MTH 173) 5CR (VDOE 3162) Calculus II (DE/ MTH 174) 5CR (VDOE 3162)</p>	<p>Integrated Science III (VDOE 4311) 13AP Biology (VDOE 4370) Biology I (DE/ BIO 101) 4CR (VDOE 4370) Biology II (DE/BIO 102) 4CR (VDOE 4370) Chemistry (VDOE 4410) H Chemistry (VDOE 4410) A Physics (VDOE 4510) 13AP Physics (VDOE 4570)</p>	<p>VA and US History I (VDOE 2361) VA and US History II (VDOE 2362) VA and US History (VDOE 2360) H VA and US History (VDOE 2360) 13AP US History (VDOE 2319) 13AP European History (VDOE 2399)</p>		<p>Architectural Drawing and Design (VDOE 8437) 2 CR and Computer Aided Drafting I (DE/ DRF 231) 3CR Advanced Architectural Drawing and Design (VDOE 8492) 2CR and Computer Aided Drafting II (DE/ DRF 232) 3CR</p>	<p><u>Occupations Requiring an Advanced Degree</u></p> <ul style="list-style-type: none"> • Aerospace Engineer • Aeronautical Engineer • Astronautical Engineer • Chemical Engineer • Civil Engineer • Computer Engineer • Electrical Engineer • Industrial Engineer • Manufacturing Engineer • Mechanical Engineer
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12	12 English (VDOE 1160)	11 Algebra II (VDOE 3135)	13AP Chemistry (VDOE 4410)	VA and US Government (VDOE 2360)		Engineering Design and Development (VDOE 8443) 2CR And Engineering Graphics (DE/ EGR 110) 3CR
	12H English VDOE 1160	11 Algebra II/ Trig (VDOE 3137)	13AP Biology (VDOE 4370)	H VA and US Government (VDOE 2360)		
	13AP English Literature (VDOE 1195)	12 Math Analysis (VDOE 3162)	Biology I (DE/ BIO 101) 4CR (VDOE 4370)	13AP VA and US Government (VDOE 2445)		Introduction to Engineering Design (DE/ EGR 123), 2CR
	13AP English Language (VDOE 1195)	13AP Statistics (VDOE 3192)	Biology II (DE/ BIO 102) 4CR (VDOE 4370)	13AP European History (VDOE 2399)		Introduction to Engineering and Engineering Methods (DE/ EGR 124), 3CR
	College Composition I (DE/ ENG 111) 3CR (VDOE 1195)	13AP Calculus (VDOE 3177)	Physics (VDOE 4510)			
	College Composition II (DE/ ENG 112) 3CR (VDOE 1195)	Pre Calculus (DE/ MTH 163) 3CR (VDOE 3162)	A Physics (VDOE 4510)			
		Calculus I (DE/ MTH 173), 5CR (VDOE 3162)	13AP Physics (VDOE 4570)			
		Calculus II (DE/ MTH 174), 5CR (VDOE 3162)				
High school courses in the pathway are coded: A=Accelerated; AP= Advanced Placement; CR= Credit; H=Honors; DE= Dual Enrollment; VC=Verified Credit						
List related certifications/credentials approved by VDOE and offered locally: AutoCAD Certifications Virginia Workplace Readiness Assessment (NOCTI) and IC ³ Certification Pre-Engineering Assessment (NOCTI) Occupational Safety Health and Administration (OSHA)				Additional Learning Opportunities: CTSO Organization(s): <input type="checkbox"/> SkillsUSA and <input checked="" type="checkbox"/> TSA Work-Based Learning: <input checked="" type="checkbox"/> Career Research <input checked="" type="checkbox"/> Student Apprenticeship <input checked="" type="checkbox"/> Mentorship <input checked="" type="checkbox"/> Job Shadowing <input checked="" type="checkbox"/> Service Learning Project		
Postsecondary Placement Assessments: COMPASS and SAT II				College Entrance Exams: ACT and SAT I		
POST SECONDARY	POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY					
	Pathway	Associate Degree, College Certificate, or Apprenticeship		Bachelor's Degree		Postgraduate Degree
	Engineering and Technology	J. Sargeant Reynolds Community College		Virginia State University Bachelor's of Science		Virginia Commonwealth University Masters of Science Doctoral Degree

College: [J Sargeant Reynolds Community College – Associate Degree in Engineering](#)

School Division(s): [Richmond City Public Schools](#)

Postsecondary:								
Semester	English	Science	Mathematics	Social Studies	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES INCLUDES POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1 st Semester	College Composition I	College Chemistry I	Calculus with Analytic Geometry I	Introduction to Engineering and Engineering Methods	College Success Skills	Personal Wellness Elective		
Year 1 2 nd Semester	College Composition II	Introduction to Engineering Design or Engineering Graphics	Engineering Mechanics-Statics or Engineering Elective	Personal Wellness Elective	Calculus w/ Analytic Geometry II	Humanities Elective		
Year 2 1 st Semester	University Physics	Engineering Elective	Vector Calculus	Engineering Economy or Engineering Elective	Social / Behavioral Science Elective			
Year 2 2 nd Semester	Engineering Elective	Fine Arts Elective	Social / Behavioral Science Elective	University Physics II	Ordinary Differential Equations			
College courses offered locally in the high school for college credit are coded: A=Accelerated; CR= Credit; H=Honors; DE= Dual Enrollment; VC=Verified Credit								
Related Industry Certifications Available: AutoCAD Certifications Occupational Safety Health and Administration (OSHA)					Additional Suggested Learning Opportunities: Student Organizations: Society of Women Engineers, Richmond Area Program for Minorities in Engineering, Vocational Education Careers of America, National Society of Black Engineers, National Technical Association Work-Based Learning: <input checked="" type="checkbox"/> Cooperative Education <input checked="" type="checkbox"/> Internship <input checked="" type="checkbox"/> Mentorship <input checked="" type="checkbox"/> Job Shadowing <input checked="" type="checkbox"/> Service Learning Project <input type="checkbox"/> Registered Apprenticeship			
UNIVERSITY	University/College: Virginia State University – B.S. Degree in Mechanical Engineering							
	Degree or Major: B.S. Degree in Mechanical Engineering							
	Number of Articulated CC Credits: 60							

Notes:



Governor’s Career and Technical Academy for STEM in Richmond Plan of Study



Cluster: Health Sciences

Pathway: Therapeutic Services

Student Name: _____

School: _____

Date: _____

This Career Pathway Plan of Study serves as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended and individualized to meet each learner’s educational and career goals.

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses	Occupations Relating to This Pathway
	6	6English 6H English 7A English	6Mathematic s 6H Mathematics 7A Mathematics	6 Science 6H Science 7A Life Science	6 US History I 6H US History 1	Keyboarding Comp. Applications Exploratory Foreign Language	Family & Consumer Sciences Exploratory	<u>Occupations Requiring Less than a Degree:</u> Clinical Medical Assistant EMT/Paramedic ER Technician Exercise Instructor Nursing Assistant Orthopedic Technician Personal Trainer Physical Therapist/Assistant Radiology Technician Respiratory Therapist <u>Occupations Requiring a Baccalaureate Degree</u> Athletic Trainer Employee Fitness Director Exercise Physiologist Occupational Therapist Recreation Therapist Sports Nutritionist Sports Psychologists Surgical Technician

MIDDLE	7	7 English 7H English 8A English	7 Mathematics 7H Mathematics 7A Mathematics 8A Pre Algebra 9A Algebra I (VDOE 3130)	7 Life Science 7H Life Science 8A Physical Science	7 US History II 7H US History II	7 Health and Physical Education	Keyboarding (VDOE 6150) Make it Your Business (VDOE 6111-18)
	8	8 English 8H English 9A English (VDOE 1130)	8 Pre Algebra 8H Pre Algebra 9A Algebra I (VDOE 3130) 10A Geometry (VDOE 3143)	8 Physical Science 8H Physical Science 9A Earth Science (VDOE 4210) 9A Biology (VDOE 4310)	8 Civics/ Economics 8H Civics/ Economics	8 Health and Physical Education	Computer Applications (VDOE 6617) Career Investigations I (VDOE 9070)
Career Assessment: Virginia Wizard and Career Cruising							
SECONDARY	9	9 English (VDOE 1130) 9H English (VDOE 1130) 10A English (VDOE 1140)	9 Integrated Math I (VDOE 3131) 9 Integrated Math II (VDOE 3132) 9 Algebra I (VDOE 3130) 9H Algebra I (VDOE 3130) 10A Geometry (VDOE 3143) 11A Algebra II/ Trig (VDOE 3137)	Integrated Science I (VDOE 4211) Earth Science (VDOE 4210) H Earth Science (VDOE 4210) Biology (VDOE 4310) 10A Biology (VDOE 4310)	World Geography (VDOE 2210) H World Geography (VDOE 2210) World History and Geography I to 1500 AD (VDOE 2341) H World History and Geography to 1500 AD (VDOE 2341)	Foreign Language Health and Physical Education (VDOE 7300)	Keyboarding Applications (VDOE 6152) 1CR Introduction to Health and Medical Sciences (VDOE 7555) 1CR Medical Terminology (VDOE 8383) 1CR and Medical Terminology (DE/ HLT 143) 3CR

10	10 English (VDOE 1140)	9 Integrated Math II (VDOE 3132)	Integrated Science II (VDOE 4311)	World History and Geography I to 1500 AD (VDOE 2341)	Foreign Language	Human Anatomy and Physiology (VDOE 4330) 1CR
	10H English (VDOE 1140)	10 Geometry I (VDOE 3144)	Biology (VDOE 4310)	H World History and Geography to 1500 AD (VDOE 2341)	Health and Physical Education (VDOE 7400)	Nutrition and Wellness (VDOE 5147) 1CR
	11A English (VDOE 1150)	10 Geometry II (VDOE 3145)	Biology Part I (VDOE 4300)	World History and Geography II to 1500 AD to Present (VDOE 2341)		
		10 Geometry (VDOE 3143)	Biology Part II (VDOE 4301)	H World History and Geography II to 1500 AD to Present (VDOE 2341)		
	10H Geometry (VDOE 3143)	11A Algebra II (VDOE 3135)	H Biology (VDOE 4310)			
	11A Algebra II (VDOE 3135)	11A Algebra II/ Trig (VDOE 3137)	Chemistry (VDOE 4410)			
	12A Math Analysis (VDOE 3162)		11A Chemistry (VDOE 4410)			

11	11 English (VDOE 1150)	10 Geometry II (VDOE 3145)	Integrated Science III (VDOE 4411)	VA and US History I (VDOE 2361)	Foreign Language	Emergency Medical Technician I (VDOE 8333) 2CR
	11H English (VDOE 1150)	10 Geometry (VDOE 3143)	Biology I (DE/ BIO101,) 4CR (VDOE 4370)	VA and US History II (VDOE 2362)		Emergency Medical Technician II (VDOE 8334) 2CR
	12A English (VDOE 1160)	11 Algebra II (VDOE 3135)	Biology II (DE/BIO 102) 4CR (VDOE 4370)	VA and US History (VDOE 2360)		Emergency Medical Technician III (VDOE 8335) 1CR
	13AP English Lit (VDOE 1195)	11H Algebra II (VDOE 3135)	Biology II (DE/BIO 102) 4CR (VDOE 4370)	H VA and US History (VDOE 2360)		Emergency Medical Technician (DE/ EMS 111) 6CR
	13AP English Language (VDOE 1195)	11 Algebra II/ Trig (VDOE 3137)	Chemistry (VDOE 4410)	13AP US History (VDOE 2319)		Emergency Medical Technician (DE/EMS 120) 1CR
	College Composition I (DE/ ENG 111) 3CR (VDOE 1195)	12A Math Analysis (VDOE 3162)	H Chemistry (VDOE 4410)	13AP European History (VDOE 2399)		
	College Composition II (DE/ ENG 112) 3CR (VDOE 1195)	13AP Statistics (VDOE 3192)	Chemistry I (DE/ CHM 101) 4CR (VDOE 4470)			
	13AP Calculus (VDOE 3177)	Chemistry II (DE/ CHM 102) 4CR (VDOE 4470)				
	Pre Calculus (DE/ MTH 163) 3CR, (VDOE 3162)	A Physics (VDOE 4510)				
	Calculus I (DE/ MTH 173) 5CR (VDOE 3162)	AP Biology (VDOE 4370)				
	Calculus II (DE/ MTH 174) 5CR (VDOE 3162)	13AP Physics (VDOE 4570)				

12	12 English (VDOE 1160)	11 Algebra II (VDOE 3135)	13AP Biology (VDOE 4370)	VA and US Government (VDOE 2360)	Foreign Language	Sports Medicine (VDOE 7660) 2CR
	12H English (VDOE 1160)	11 Algebra II/ Trig (VDOE 3137)	Biology I (DE/ BIO 101) 4CR (VDOE 4370)	H VA and US Government (VDOE 2360)		Sports Medicine II (VDOE 7662) 2CR
	13AP English Literature (VDOE 1195)	12 Math Analysis (VDOE 3162)	Biology II (DE/BIO 102) 4 CR (VDOE 4370)	13AP VA and US Government (VDOE 2445)		
	13AP English Language (VDOE 1195)	13AP Statistics (VDOE 3192)	13AP Chemistry (VDOE 4410)	13AP European History (VDOE 2399)		
	College Composition I (DE/ ENG 111) 3CR (VDOE 1195)	13AP Calculus (VDOE 3177)	ChemistryI (DE/ CHM 101) 4 CR VDOE 4470			
	College Composition II (DE/ ENG 112) 3CR (VDOE 1195)	Pre Calculus (DE/ MTH 163) 3CR (VDOE 3162)	Chemistry II (DE/ CHM 102) 4 CR (VDOE 4470)			
		Calculus I (DE/ MTH 173) 5CR (VDOE 3162)	Physics (VDOE 4510)			
	Calculus II (DE/ MTH 174) 5CR (VDOE 3162)	A Physics (VDOE 4510)				
		13AP Physics (VDOE 4570)				

High school courses in the pathway are coded: A=Accelerated; AP= Advanced Placement; CR= Credit; H=Honors; DE= Dual Enrollment; VC=Verified Credit

List related certifications/credentials approved by VDOE and offered locally:

Workplace Readiness Assessment (NOCT) and IC3 Certification
 Emergency Medical Technician
 EMS First Responder
 Cardiopulmonary Resuscitation (CPR)

Additional Learning Opportunities: Student Organizations: National Athletic Trainers Association, American College of Sports Medicine, National Association of Emergency Medical Technicians, Health Occupations Students of America

Work-Based Learning: Job Shadowing, Coordinated Internship, Student Apprenticeship, Mentorship, Cooperative Learning

Postsecondary Placement Assessments: COMPASS and SAT

College Entrance Exams: ACT, SAT I and SAT II

POSTSECO NDARY	POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY			
	Pathway	Associate Degree, College Certificate, or Apprenticeship	Bachelor's Degree	Postgraduate Degree

	School of Nursing Allied Health	J. Sargeant Reynolds Community College	<i>Virginia Commonwealth University</i> <i>Bachelor's of Science</i>	Virginia Commonwealth University Masters of Science Doctoral Degree
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College: **J. Sargeant Reynolds Community College** School Division(s): [Richmond City Public Schools](#)

Postsecondary Placement Assessments: COMPASS and SAT II								
Semester	English	Mathematics	Science	Social Studies	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES INCLUDES POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1 st Semester		Math 120	Health Science NAS 161	SDV 100 College Success Skills	EMS 112 EMT I Or EMS 111 EMT Basic	EMS 113 EMT II	EMS 120 EMT Basic Clinical	
Year 1 2 nd Semester	English 111 College Composition		Health Science II NAS 162		EMS 1561 Introduction to Advanced Life Support	EMS 170 ALS Internship	EMS 153 ALS – Trauma Care	Social / Behavioral Science Elective
Year 2 1 st Semester			ITE 115 Introduction to Computer Applications and Concepts		EMS 155 ALS – Medical Care	EMS 159 ALS - Special Populations	EMS 172 ALS Clinical Internship II	EMS 173 ALS Clinical Field Internship II
Year 2 2 nd Semester			Personal Wellness Elective		EMS 205 Advanced Pathophysiology	EMS 207 Advanced Patient Assessment	EMS 242 Clinical Internship II EMS 243 Field Internship II	EMS 201 EMS Professional Dev.
College courses offered locally in the high school for college credit are coded: DE (Dual Enrollment) and/or VC (Validated Credit)								

<p>Related Industry Certifications Available: Emergency Medical Technician EMS First Responder Cardiopulmonary Resuscitation (CPR)</p>	<p>Additional Suggested Learning Opportunities: Work-Based Learning: Cooperative Education Internship Mentorship Job Shadowing</p>
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Appendix G: Camp Confidence

**“Camp CONFIDENCE” * at the Governor’s Career and Technical Academy for
STEM in Richmond**

- Theme:** “Preparation Meets Opportunity”
- Purpose:** To increase students’ knowledge to be successful in a variety of career paths
- Rationale:** To eliminate barriers to students’ successful entry into careers
- Format:** Interactive seminars will be offered twice monthly covering “life skills” to help students with problem-solving and decision-making. Parents will be expected to attend four sessions. Parent sessions will also focus on financial planning for postsecondary education. Internal and external sources will be used to facilitate seminars.

Seminar Topics:

- C**ommunication Skills
- O**rganizational Skills
- N**egotiation Skills
- F**inancial Fitness and Budgeting
- I**ndividuality/Uniqueness
- D**etermination
- E**ducation
- N**etworking
- C**ompetence
- E**tiquette

Related topics: stress management, appropriate attire for the workplace, time management, leadership development, research and evaluation, travel/exchange programs.

Supportive Activities:

- Toastmasters for Youth Development;
- Challenge Discovery for team building;
- College campus visits; and
- Visits for cultural enrichment, i.e., museums, and positive leisure/social activities.

Reference: developed by CgM 2009

Appendix H: Virtual Worlds Program

Governor's Career and Technical Academy for STEM in Richmond

Richmond City Public Schools, Richmond VA

VIRTUAL WORLDS

“Virtual Worlds,” is an interactive computer based communication program through which teams of students collaborate with a teacher coach, and student mentors at Virginia Commonwealth University in Richmond VA, and Cornell University in Ithaca NY, in order to build their own 3D multiuser computer graphics exhibits. Within these exhibits, students and educators can interact to learn about interesting topics and interactive forums. Students gain beneficial tools by working through the innovative medium of virtual worlds. Students learn and utilize technology literacy, science literacy, history, mathematical principles, contemporary forms of research, as well as valuable team skills through working with college students and peers.

The following statements offer brief insight into what SciCentr and SciFair are as presented on the Cornell University SciCentr Virtual Worlds Web site.

[“SciCentr](#) is an online science museum of 3D, multiuser exhibits featuring basic science and contemporary research, especially projects at Cornell University. Some exhibits are framed as galleries, some as games, and others as interactive laboratories. In these exhibits, students and educators can interact to learn about interesting topics ranging from wave science to genetics.”

[“SciFair](#) is a science communication program through which teams of teens collaborate with student mentors at Cornell University to build their own exhibits. Students gain the tools for working with the innovative medium of virtual worlds (technology literacy), as well as science literacy and valuable team skills through working with college students and peers.”

Richmond City Public Schools is in the process of acquiring a virtual universe (computer server) that is comparable to the virtual universe at Cornell University, and will be utilized in accordance with the SciCentr and SciFair programs. This will enable Richmond City Public Schools to host and manage the program with all middle and high schools.

The Governor's Career and Technical Academy for STEM at the Richmond Technical Center is a complimentary match for the virtual worlds program. Students from both middle schools and high schools will be able to learn how to create their own virtual worlds using virtual worlds software, and receive mentoring and guidance from undergraduate and graduate students from VCU through mentoring, after school programming, and summer virtual institutes offered by Richmond City Public Schools and hosted at VCU. The approach for this program is to introduce students who have little or no experience using this technology, to the fields of mathematics, computer science, and computer engineering, according to the state's Standards of Learning through the use of virtual worlds' software.

The targeted grade levels for the program in middle schools will be grades 6-8, and in high schools grades 9-12. The learning objectives will include, but not be limited to:

- exposing middle school students to new methodologies of computer technology and software development;
- teaching students how to use computers and the Internet to conduct research;
- introducing students to the fields of computer science, computer engineering, software development, and technological pathways;
- teaching students how to work together as teams;

- encouraging high school students and middle school students to mutually mentor one another and share the science of virtual worlds and gain the benefits of student interaction;
- working and interacting with undergraduate computer science majors at Virginia Commonwealth through the University's School of Computer Science and School of Engineering via online and in world mentoring to create a direct connection with higher education; and
- encouraging students to pursue venues of higher education in fields of science, technology, engineering, and mathematics.

Teachers at Richmond Technical Center have begun the training required to provide instruction that will likely appear as “gaming” to students. Expanded professional development opportunities for teachers are being discussed with Virginia Commonwealth University’s Computer Science Department.

Appendix I: Academy Student Application and Selection Scoring Rubric

**Governor's Career and Technical Academy for
Pre-Engineering and Health and Human Performance Academy
Student Application 2009-2010**

Application materials must be submitted or postmarked on or before school deadlines to receive priority consideration.

First Name _____ Middle Name _____ Last Name _____

Address _____

City _____ State _____ Zip _____

Phone _____ Cell or Message _____ E-Mail _____

Student ID Number _____ Age _____ Date of Birth _____

School currently attending (Name, City, State): _____

Date Application submitted: _____

Class level at time of planned enrollment: (circle one) **Freshman** **Sophomore**
Junior **Senior**

Overall Grade Point Average: _____ Science Grade Point Average: _____

Mathematics Grade Point Average: _____

List all related Mathematic Courses w/Grades: _____

List all related Science Courses w/Grades: _____

Signature of Applicant _____

Signature of Parent(s) _____

Academy Student Selection Rubric					
Factors	Rating Scale (1-5)				
	5 is highest and 1 is the lowest				
	5	4	3	2	1
Application					
Overall GPA					
Science GPA					
Math GPA					
Interest Inventory Assessment					
Essay					
Interview					
Referral Letter					
*Summer Program (extra credit)					
*Attendance					

- Application
 - (5) Signed, without any misspelled words and no omissions
 - (4) Signed with one or two misspelled words and no omissions
 - (3) Signed with one or two misspelled words and one omission
 - (2) Signed with more than two misspelled words and two omissions
 - (1) Signed with more than three misspelled words and more than two omissions
- Overall GPA
 - (5) Overall “A” average according to RCPS grade system
 - (4) Overall “B” average according to RCPS grade system
 - (3) Overall “C” average according to RCPS grade system
 - (2) Overall “D” average according to RCPS grade system
 - (1) Overall “F” average according to RCPS grade system
- Science GPA
 - (5) Overall “A” average according to RCPS grade system
 - (4) Overall “B” average according to RCPS grade system
 - (3) Overall “C” average according to RCPS grade system
 - (2) Overall “D” average according to RCPS grade system

- (1) Overall “F” average according to RCPS grade system
- Math GPA
 - (5) Overall “A” average according to RCPS grade system
 - (4) Overall “B” average according to RCPS grade system
 - (3) Overall “C” average according to RCPS grade system
 - (2) Overall “D” average according to RCPS grade system
 - (1) Overall “F” average according to RCPS grade system
- Interest Inventory Assessment
 - (5) STEM appears in the top three clusters
 - (4) STEM appears in the top five clusters
 - (3) STEM appears in the top seven clusters
 - (2) STEM appears in the top nine ranking according to interest
 - (1) STEM appears in the top ten ranking according to interest
- Essay
 - (5) Addresses topic fully, written using 50-100 words, no misspelled words, and no incorrect punctuation errors.
 - (4) Addresses topic fully, written using 50-100 words, no more than two misspelled words, and not more than two incorrect punctuation errors.
 - (3) Addresses topic fully, written using 50-100 words, no more than three misspelled words, and not more than three incorrect punctuation errors.
 - (2) Somewhat addresses the topic, written 50-100 words, no more than three misspelled words and not more than three incorrect punctuation errors.
 - (1) Very little addresses the topic, or written using less than 50 or more than 100 words, or more than three misspelled words and more than three punctuation errors.
- Interview
 - (5) Responds to all questions satisfactorily
 - (4) Responds to most of the questions satisfactorily
 - (3) Responds to some of the questions satisfactorily
 - (2) Responds to a few of the questions satisfactorily

- (1) Responds to two or less questions satisfactorily
- Referral Letter (from Science and/or Mathematics Educator)
 - (5) Very highly recommended
 - (4) Highly recommended
 - (3) Satisfactorily recommended
 - (2) Somewhat recommended
 - (1) Recommended with reservations
- Summer Program (extra credit can be given for attending a summer program that covers any of the components of STEM) (more detailed information will be provided)
- Attendance
 - (5) Perfect Attendance for the last semester
 - (4) No more than 2 unexcused days missed during the last semester
 - (3) No more than 4 unexcused days missed during the last semester
 - (2) No more than 6 unexcused days missed during the last semester
 - (1) More than 6 unexcused days missed during the last semester.

Appendix J: Statement(s) of Support

RICHMOND PUBLIC SCHOOLS*Office of the Superintendent*

301 North Ninth Street • Richmond, Virginia 23219 • (804) 780-8320 • FAX (804) 780-4122

YVONNE W. BRANDON, Ed.D.
Superintendent

March 9, 2009

Statement of Support for the Governor's CTE Academy for STEM in Richmond

As Superintendent of Richmond Public Schools, I wholeheartedly support and enthusiastically endorse the creation of the Governor's Career and Technical Education Academy for Science, Technology, Engineering and Mathematics (STEM) at the Richmond Technical Center (RTC). The location of STEM at one of the region's leading technology and career training facilities is an appropriate choice and logical linkage.

As head of the city's public school system, I can guarantee that the Academy will receive the essential support necessary to ensure its success. In fact, Richmond Public Schools, along with the administration and staff at RTC, will gladly assist with faculty training, classroom and laboratory design, and community partnerships.

Of course, locating the Academy at the Richmond Technical Center will most benefit our students. Indeed, they are my primary reason for requesting that the Academy be located in Richmond. An important component of the district's overall plan to make Richmond one of the nation's leading urban school systems is our 21st Century Workforce Preparedness Initiative. Simply put, we want the graduates of Richmond Public Schools to be equipped with the knowledge and skills required for postsecondary education or successful entry into the workforce. These are the only outcomes we deem acceptable for our students. By locating the Governor's Career and Technical Education Academy at the Richmond Technical Center, you will greatly assist in our achieving these goals.

Yvonne W. Brandon, Ed.D.
Superintendent

RICHMOND PUBLIC SCHOOLS



Richmond Technical Center
 2020 Westwood Avenue
 Richmond, Virginia 23230-4198
 Telephone (804) 780-6237 Fax (804) 780-6061

Statement of Support for the Governor's CTE Academy for STEM in Richmond:

As the principal of the Richmond Technical Center (RTC) for the past eight years, I am committed, along with the faculty and staff, to provide a nurturing and innovative educational environment for our students. The establishment of the Governor's Career and Technical Education Academy in STEM at RTC will provide additional options for students to pursue.

An essential component of the Governor's Career and Technical Academy for Science, Technology, Engineering and Mathematics (STEM) is support from the school in which the program will be held. As principal of the Richmond Technical Center, I will:

1. Select well-trained and prepared faculty for the Academy
2. Assist in the evaluation of the programs, courses and the overall operation of the Academy
3. Design classroom and laboratory space for instruction
4. Create an environment that is conducive for learning
5. Collaborate and Partner with businesses and other community agencies
6. Collaborate and Partner with both community and four year colleges
7. Assist in the approval of dual enrollment courses for certain identified courses at the high school level, and
8. Assist in preparing students for post-secondary experiences in the workplace, technical school or college.

By signing this statement, I certify that I am a willing supporter in the establishment of the Governor's Career and Technical Education Academy for Science, Technology, Engineering and Mathematics in Richmond.

N. Maurice Holmes
 N. Maurice Holmes

February 27, 2009

"In accordance with federal laws, the laws of the Commonwealth of Virginia and the policies of the School Board of the City of Richmond, Richmond Public Schools does not discriminate on the basis of sex, race, color, age, religion, disabilities or national origin in the provision of employment and services. The Richmond Public Schools operates equal opportunity and affirmative action programs for students and staff. The Richmond Public Schools is an equal opportunity/affirmative action employer. The Section 504 Coordinator is Mr. Harley Toney, Richmond Public Schools, 301 North Ninth Street, Richmond, Virginia 23219, (804) 780-7911. The ADA Coordinator is Ms. Aisha Shamburger, 2015 Seddon Way, 1st Floor, Richmond, VA 23230-4117 (804) 780-6211. The Title IX Officer is Mrs. Angela C. Lewis, Richmond Public Schools, 301 North Ninth Street, Richmond, Virginia 23219, (804) 780-7716." The United States Department of Education's Office of Civil Rights may be contacted also at P.O. Box 14620, Washington, D.C. 20044-4420. Telephone: 202-208-2545.

Raymond Cousins
RTC CTE Advisory Council, Chair
Richmond Technical Center
2020 Westwood Avenue
Richmond, VA 23230
804-780-6237

February 23, 2009

Statement of Support for the Governor's CTE Academy in STEM in Richmond:

As Chair of the Richmond Technical Center Career and Technical Education Advisory Council (RTC CTE), it gives me great pride to share the enthusiastic participation of the Advisory Council and our role to model the educational, business, professional and community service behaviors at the Richmond Technical Center.

As an Advisory Council we are governed by one committed guiding purpose, to enrich the lives of students, staff and the community at Richmond Technical Center (RTC). We have a strong advisory council with varying levels of expertise that resonates into passionate business acumen. Our council is committed to supporting the goals and ideals of Richmond Public Schools and RTC students in the following arenas:

- Assist the Administration in developing and implementing broad career and technical education programs for the school year;
- Work with designated staff members in planning and evaluating career and technical education programs in the school;
- Facilitate communication and cooperation between the school, the citizens, organizations, industries and institutions of the community; and,
- Address the student body on topics, which will inspire students to pursue career and technical education careers.

These commitments have rendered great success with the RTC CTE Advisory Council Annual Golf Tournament and Scholarship Fundraiser affording the opportunity for students to earn scholarship dollars to pursue college degrees. Each year the RTC CTE Advisory Council hosts a Business Partners Event where the business community as well as public leaders and educators collaborate and share best practices focused on enriching the lives of RTC students, their families and communities. Mock Job Interviews in the spring and fall of each year embraces the business and technical acumen of RTC CTE Advisory Council Members and their employers to role model the professional behavior of what is expected and equally demanded in life after high school. Whether our students are preparing for college, employment or the armed services, members of the RTC CTE Advisory council lends countless volunteer hours in working with the students of RTC to give them a realistic vision of what a future could be.

Through a determined commitment to promote financial literacy one of our RTC CTE Corporate Sponsors was recognized as a Regional Department of Education Award Winner in 2007. The advisory council partners with the RTC Clusters in their respective disciplines and assists teachers and staff in culminating the classroom with the workforce. Students get an opportunity

to do job shadowing, internships, and mentoring opportunities at RTC CTE Advisory Council places of employment and community involvement.

The RTC CTE Advisory Council attends the City of Richmond's School Board and City Council meetings and works very closely with Central Office Administration. Advisory Council members are present for the installation of RTC officers for student organization; serves as host/hostess at the Skills USA Competition; and speaks at the School Board Finance and Budget Committee meeting to discourage the elimination of budget cuts in the CTE classroom. The council attends and participates in many educational and community events.

We invite you and your staff to attend RTC Annual Awards Night Recognition Ceremony where students and their families celebrate the career and technical achievements of an entire school year's hard work, determination and perseverance. These ceremonies year-over-year will tug at your heart and if you are an educator or have been affected by an educator you are thankful for the thankless and selfless acts they do every day to make sure that our students become outstanding citizens.

Raymond Cousins



RTC CTE Advisory Council, Chair



OLD DOMINION UNIVERSITY
4111 Monarch Way, Ste 106

PH: 757.683.5505
Fax: 757.683.5509

Norfolk, Virginia 23508

www.vatpdc.com

March 15, 2009

Mrs. Maurice Holmes
Principial
Richmond Technical Center
2020 Westwood Ave
Richmond, VA 23230-4198

Dear Mrs. Holmes:

I am pleased to submit this letter in support of the Richmond Public Schools' Richmond Technical Center's application for the Virginia Department of Education, Office of Career and Technical Education Services, grant to establish a Project Lead The Way (PLTW) program. Project Lead The Way offers a four-year sequence of courses which, when combined with college preparatory mathematics and science courses in high school, introduces students to engineering and engineering technology prior to entering college. The grant will be used to establish a state of the art Project Lead The Way laboratory. We endorse the course work which will include Introduction to Engineering Design, Principles of Engineering, Digital Electronics, Engineering Design and Development and Civil Engineering and Architecture or Computer Integrated Manufacturing.

Old Dominion University is committed to partner with Richmond Public Schools' Richmond Technical Center to implement a partnership for the purpose of increasing the number of students interested in engineering related careers while improving students' academic knowledge and technical abilities. This collaborative project will focus on strengthening STEM (Science, Technology, Engineering and Math) foundations in high school students using a combination of activities-based, project -based, and problem-based (APPB) learning. Our organization supports this goal.

This letter of support documents Old Dominion University's commitment to our partnership with Richmond Public Schools for the specific purpose of increasing the number of students

interested in careers in engineering and engineering technology fields. This support is demonstrated by submitting this letter of support and may include the possibility of providing mentors for students in their junior and senior engineering courses, speaking engagements for the students and /or providing engineers to serve on a panel of outside reviewers to evaluate student senior projects at the end of the school year.

Sincerely,



Jerry B. Robertson, P.E.
National Affiliate Director – Virginia PLTW
Executive Director, VATPDC

Appendix K: Statement of Assurance

