

# Virginia Board of Education Agenda Item



Agenda Item: M

Date: May 24, 2012

<b>Title</b>	First Review of a Proposal from New Kent County to Establish the Bridging Communities Governor's STEM Academy		
<b>Presenter</b>	Larkin Phillips, Director, Bridging Communities Regional Career and Technical Center, New Kent County Public Schools Lolita B. Hall, Director, Office of Career and Technical Education Services		
<b>E-mail</b>	<a href="mailto:lphillips@nkcps.k12.va.us">lphillips@nkcps.k12.va.us</a>	<b>Phone</b>	(804) 966-9650
	<a href="mailto:lb.hall@doe.virginia.gov">lb.hall@doe.virginia.gov</a>		(804) 225-2051

**Purpose of Presentation:**

Other initiative or requirement. Specify below:

First review and acceptance of the Proposal from New Kent County to Establish the Bridging Communities Governor's STEM Academy.

**Previous Review or Action:**

No previous review or action.

**Action Requested:**

Action will be requested at a future meeting. Specify anticipated date below:

Date: June 28, 2012

Action: Final review and approval

**Alignment with Board of Education Goals: Please indicate (X) all that apply:**

x	Goal 1: Expanded Opportunities to Learn
	Goal 2: Accountability of Student Learning
	Goal 3: Nurturing Young Learners
	Goal 4: Strong Literacy and Mathematics Skills
	Goal 5: Highly Qualified and Effective Teachers and Administrators
	Goal 6: Sound Policies for Student Success
	Goal 7: Safe and Secure Schools
	Other Priority or Initiative. Specify:

**Background Information and Statutory Authority:**

Goal 1: The Governor's STEM Academy is designed to expand opportunities for the general student population to acquire STEM literacy and other critical skills, knowledge, and credentials that will prepare them for high-demand, high-wage and high-skill careers.

Partnerships establishing academies must include at least one public school division, business and industry, and postsecondary education. On November 29, 2007, the Board of Education approved the criteria to establish a Governor's STEM Academy. Subsequently, on March 19, 2008, the Board approved the standards for the Governor's Career and Technical Education Exemplary Standards Awards Program, which all Career and Technical Academies must implement.

As required by the Board of Education, the State Council of Higher Education for Virginia (SCHEV) has reviewed the attached proposal and recommends that the Board approve the proposal. Staff members of 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 in Attachment A. Attachments B and C are the reports from the reviews by SCHEV and the DOE. Attachment D is the complete proposal.

Currently, there are 11 Governor's STEM Academies in Virginia. They are located in Arlington County, Chesterfield County, Halifax County, Hampton City, Loudoun County, Richmond City, Russell County, Stafford County, Suffolk City, Carroll County, and Virginia Beach City.

**Summary of Important Issues:**

The proposal for the Bridging Communities Governor's STEM Academy consists of partnerships among five school divisions: New Kent County; Charles City County; King William County; King and Queen County; and Middlesex County. In addition, Rappahannock Community College, Town of West Point Town Council, Dominion Resources Services, and J. Sanders Construction Company will be other active partners.

The Bridging Communities Governor's STEM Academy will emphasize two career clusters that will provide students a clear pathway among high school and higher education and high-demand jobs. Students enrolled in the proposed Academy will receive academic and technical training in career preparation for Health Sciences and Engineering and Technology. The study of health science careers prepares students in occupations for wellness and preventive care. This field allows one to work in diverse environments such as hospitals, medical offices, or labs. The increasing proportion of middle-aged and aging populations will continue to drive demand. A dramatic growth in the employment of registered nurses is expected with one of the largest numbers of new jobs predicted, plus thousands of jobs will open up as employers replace experienced nurses who leave the occupation.

In *Therapeutic Services*, students in the Academy will learn about the care and treatment of patients to improve their health over time. They will explore and learn about the tools necessary to live a healthier and problem-free lifestyle. Students will be provided an opportunity to participate in the senior level Nurse Aide Program for dual enrollment with the Rappahannock Community College. Additionally, high school senior students will have the opportunity to complete up to four dual enrollment classes selected from the Licensed Practical Nurse Program. Students enrolled in this program will complete the clinical experience requirement not later than the summer after high school graduation.

The *Engineering and Technology* pathway is in the Science, Technology, Engineering, and Mathematics (STEM) Cluster. Engineers are needed to provide the ideas that lead to improved products and more efficient processes. Specializations in engineering will continue to serve as integral elements to growing industries, promoting steady job growth overall. The specialty that can expect the most employment growth is biomedical engineering, which has an expected employment growth of 72 percent by 2018. The Modeling and Simulation program will provide students learning experiences in STEM concepts by applying design, construction, and programming of robots. Students will participate in service-learning projects that focus on a local issue or problem and develop possible solutions or models.

**Impact on Fiscal and Human Resources:**

Funding must be provided at the local level.

**Timetable for Further Review/Action:**

The proposed beginning date for Bridging Communities Governor's STEM Academy, New Kent County Public Schools, is September 2012.

**Superintendent's Recommendation:**

The Superintendent of Public Instruction recommends that the Board of Education accept for first review the proposal to establish Bridging Communities Governor's STEM Academy, New Kent County Public Schools.

**The Governor's STEM Academy**  
**at the**  
**Bridging Communities Regional Career and Technical Education Center**  
**Executive Summary**  
**May 24, 2012**

Partnership Members: Bridging Communities Board of Control, New Kent County Public Schools; Charles City County Public Schools, King and Queen County Public Schools, King William County Public Schools, Middlesex County Public Schools, Rappahannock Community College, Town of West Point Town Council, Dominion Resources Services, J. Sanders Construction Company

Lead Entity: Bridging Communities Regional Career and Technical Education Center

Fiscal Agent: New Kent County Public Schools

Contact Person: Dr. Larkin Phillips  
804 966-9650  
[LPhillips@nkcps.k12.va.us](mailto:LPhillips@nkcps.k12.va.us)

Academy Location: Bridging Communities Regional Career and Technical Education Center  
11835 New Kent Highway  
P. O. Box 232  
New Kent, Virginia 23124

Number Students: The Bridging Communities Governor's STEM Academy will have the capacity to enroll 95 students, grades 11-12. During the initial school year (2012–2013) applications will be accepted for 54 students.

Career Pathways: Engineering and Technology  
Health Science

Academy Goals and Description: The overall goals of the Governor's STEM Academy are to provide students with STEM enriched 21<sup>st</sup>-century technological skill and knowledge necessary to succeed in postsecondary education and the work force.

Specific Governor's STEM Academy objectives include:

- Improve academic achievement of Academy students.
- Increase Standards of Learning (SOL) scores for pass advanced rates for all mathematics and science courses.
- Increase completion of dual enrollment courses.

- Increase the number of industry certifications awarded to high school students.
- Increase the number of students completing a college and career ready curriculum in high school.
- Provide work-based learning experiences through strong partnerships with business and industry.
- Increase high school graduation rates.
- Reduce dropout rates.
- Increase enrollment and retention in postsecondary education.
- Reduce the number of students requiring remediation in college.
- Increase the number of graduates employed in high-wage, high-skilled careers.

Highlights  
of the  
Program:

As a result of participating in the Governor's STEM Academy in the clusters of Science, Technology, Engineering and Mathematics; and Health Science students will:

- Gain a deeper understanding of the skills and knowledge incorporated in their fields of study;
- Benefit from specialized, project-based courses which develop critical-thinking, problem-solving, and decision-making skills, preparing them for the 21<sup>st</sup>-century world;
- Acquire greater communication skills;
- Develop workplace readiness skills;
- Receive opportunities to earn industry certifications preparing them to be more competitive in the work force and when applying to advanced training schools or postsecondary institutions;
- Obtain meaningful, real-life, hands-on experiences in their career pathway; and
- Profit from opportunities for internships, mentorships, job shadowing, and cooperative education, which provide students with advantages when entering postsecondary education and/or the workplace.

The State Council of Higher Education for  
Virginia

Review of Governor's STEM Academy Proposal

Name of Lead Entity on Proposal: Bridging Communities  
Regional Career and Technical Center

Date of Review: May 9, 2012

The State Council of Higher Education for Virginia  
recommends approval of the: Bridging Communities  
Governor's STEM Academy

  
\_\_\_\_\_

Peter Blake

Director

State Council for Higher Education

5/10/12  
Date

**Virginia Department of Education  
Governor's STEM Academy  
Proposal Review Checklist**

**Title of Proposal: Bridging Communities  
Governor's STEM Academy**

**Lead Entity for Proposal: Dr. Larkin Phillips  
Academy Coordinator**

**Date of Review: May 8, 2012**

**Virginia Department of Education  
Governor’s STEM Academy  
Proposal Review Checklist**

**I. Partnership Capacity**

**Partnerships desiring to implement a Governor’s STEM 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			
B. An advisory committee, including a list of members and signed certifications from each that they are willing and able to serve in that capacity.	X			
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 STEM Academy to broaden the scope of students’ educational experiences.	X			
D. A statement of assurances that the Governor’s STEM Academy Planning Committee has reviewed provisions of <i>Administrative Procedures Guide for the Establishment of Governor’s STEM Academies</i> and agrees to follow the guidelines set forth in the document (see appendix).	X			

Criteria	Documentation			Comments
	Full	Partial	None	
E. A statement of assurances that, if applicable, an ongoing Governing Board will be established to reflect current Board of Education regulations relative to jointly operated schools and programs (see appendix).	X			
Comments:				

## II. Need/Rationale for the Academy

**Partnerships desiring to implement a Governor’s STEM 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 STEM Academy, including need at the state, local and/or regional levels.	X			
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 STEM 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			
5. Evidence that graduates will qualify for the Technical and/or the Advanced Technical Diplomas;	X			Application focuses on standard diploma and advanced studies diploma; however, the application will satisfy the requirements for the technical and/or advanced technical diplomas.
6. Incorporation of Virginia’s Workplace Readiness Skills.	X			
Comments:				

**B. 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 workplace 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			
Comments:				

**C. 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:				

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

	Documentation			Comments
	Full	Partial	None	
	X			.
Comments:				

**E. 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	
<b>Pathway #1</b>				
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 <b>or</b>	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.	X			
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			

Criteria	Documentation			Comments
	Full	Partial	None	
Comments:				

Criteria	Documentation			Comments
	Full	Partial	None	
<b>Pathway #2</b>				
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.	X			
d. Of the two pathways described, at least one must be in a STEM-related field. This career pathway should drive the	X			

Criteria	Documentation			Comments
	Full	Partial	None	
innovative capacity of the region and/or the state.				
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.	X			
Comments:				

**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; <b>or</b>	X			

Criteria	Documentation			Comments
	Full	Partial	None	
b. Earn at least 9 transferable college credits as defined in the Early College Scholars program (includes dual enrollment, AP and other options); <b>or</b>	X			
c. Earn an Associate Degree.				
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				
b. Internships; or				
c. Job Shadowing; or				
d. Mentorships; or	X			
e. Project-based learning; or	X			
f. Service learning; or	X			
g. A combination of the above.				
Comments:				

**F. Length of program and daily schedule: Governor’s STEM 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:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments: Separate Statement of Assurance is needed.				

**H. Materials and equipment to be provided to accomplish program goals and objectives.**

	Documentation			Comments
	Full	Partial	None	
	X			
Comments: Address issue in narrative or include in Assurance statement in “G.”above.				

**I. 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			
2. A review of the program design and instructional delivery;	X			

Criteria	Documentation			Comments
	Full	Partial	None	
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 STEM 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 workforce 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:				

**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 STEM 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			
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			
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		Certificate of insurance will be sent later.
Budget (from appendix)	X			
Budget Narrative	X			
Other				
Comments:				

**GOVERNOR'S STEM ACADEMY GRANT PROPOSAL**

**BRIDGING COMMUNITIES GOVERNOR'S  
STEM ACADEMY**

**BRIDGING COMMUNITIES REGIONAL  
CAREER AND TECHNICAL CENTER**

**P.O. Box 232  
New Kent, Virginia 23124**

# TABLE OF CONTENTS

	PAGE
Introduction .....	4
Rationale .....	6
Bridging Communities Governor’s STEM Academy Partnerships.....	8
Planning Committee .....	8
Advisory Committee .....	9
Memorandum of Agreement.....	9
Statement of Assurances .....	9
Fiscal Agent .....	9
Program Goals.....	9
Program Objectives.....	11
Evidence of Participation in the Governor's Exemplary Standards Award Program for Career and Technical Education .....	14
Programs and Course Descriptions.....	14
Science, Technology, Engineering & Mathematics Cluster/Engineering and Technology Pathway	
Pre-Engineering Technology Program .....	14
Modeling and Simulation Program .....	15
Health Science Cluster/Therapeutic Services Pathway	
Nurse Aide Program .....	16
STEM Academy Related .....	16
Length of Program and Daily Schedule .....	17
Assurance from the Financial Agent that operating funds and facilities are available to support the Governor's STEM Academy and are adequate to meet the needs of the program.....	17
Materials and Equipment to be Provided to Accomplish Program Goals and Objectives .....	17
Evidence of an Internal Evaluation Process to Effect Program Improvement .....	18

Administrative Procedures .....	19
Bridging Communities Governor’s STEM Academy Budget.....	23
Appendix One – Planning Committee.....	25
Appendix Two – Advisory Committee.....	42
Appendix Three – Memorandum of Understanding.....	55
Appendix Four – Statement of Assurances.....	59
Appendix Five - State of Operating Funds and Facilities Assurance .....	62
Appendix Six – Plans of Study .....	64

## Introduction

Bridging Communities Regional Career and Technical Center will open in September 2012, in New Kent, Virginia. This new Regional Career and Technical Center will serve Charles City, King William, King and Queen, Middlesex, and New Kent counties. Rappahannock Community College and J. Sargeant Reynolds Community College are active postsecondary partners. The Center will be owned, funded, and operated by the five school division partners. Regional center planning is directed by a Joint Board Control. The Joint Board membership includes one school board member from each of the five partner school divisions, a superintendent, and the Regional Center Director. The Center will open with approximately 100 students and offer programs in Health Science, Criminal Justice, HVAC, Diesel Technology, Pre-Engineering, and Modeling and Simulation. The facility will be used by Rappahannock Community College for evening educational programs.

The Bridging Communities school divisions represent rural school divisions with limited resources and enrollment. Individually, the school divisions cannot fund and support a variety of Career and Technical Education programs. The five counties' economic base is small business and agriculture. The Richmond and the Williamsburg areas are common work commuting sites for citizens. Program selection for the Center will provide opportunity for students to work in the local area or find productive employment within daily driving distance from home. Additionally, high expectation Career and Technical Education programs and partnerships with higher education will set a standard demonstrating that Bridging Communities is committed to providing students with skills needed for high-skill, high-wage employment.

The Bridging Communities Governor's Science, Technology, Engineering and Mathematics (STEM) Academy will include the Science, Technology, Engineering and Mathematics Cluster and the Health Science Cluster. Programs in the Science, Technology, Engineering and Mathematics Cluster/Engineering and Technology Pathway will be Pre-Engineering Technology and Modeling and Simulation. Nurse Aide will be the program within the Health Science Cluster/Therapeutic Services Pathway. The Governor's STEM Academy will provide dual enrollment, partnering with Rappahannock Community College.

Year one of the pre-engineering curriculum design will fully integrate the Intelitek Engineering curriculum and learning modules along with the Department of Education competencies for the three technology education classes. Students will integrate mathematics and science applications through engagement in robotics instruction. Students will learn a STEM concept and immediately apply that concept to the design, construction, and programming of a robot. The curriculum will be designed to provide classroom competition between robotics teams. Students will test design ideas and build interest in STEM concepts related to the robot design and performance.

Year two of the program will include two dual enrollment classes providing six credits through Rappahannock Community College. Service learning will be a required part of this class. The classroom instructor, school faculty and staff, and STEM professionals (e.g., community and postsecondary volunteers) will help students determine a service project that will be completed during the course. Students will partner with an individual or group to research a local issue or problem and develop a possible solution or model. This service-learning project will develop students' communication, leadership, and problem-solving skills, and link classroom instruction to real-world STEM focused scenarios. Selected service projects will be an opportunity for students to focus engineering concepts to problems important to them. In addition, connections from the course to the local community and to area STEM professionals will be made. Students

will have at least one opportunity to formally present service project results. Many of the service project partners or professionals will provide another opportunity for students to present before a group of adults. The service-learning experience and related skills learned will better prepare students for postsecondary education and for future employment.

The Modeling and Simulation program will be a two-year program providing students with six high school credits and at least 24 dual enrollment credits. Curriculum will provide the skills students need for entry-level employment in Web design, graphic design, and animation fields. The dual credit courses will teach state-of-the-art software such as Adobe Photoshop, Deamweaver, Flash, Studio Viz, and other 3-D software, plus Microsoft products. Juniors entering this program will have completed a Computer Information System class or similar Business and Information Technology class providing foundation skills in Microsoft Office products. Microsoft products including Word, PowerPoint, and Excel will be used in the service-learning project to develop presentations for the community and to create the service-learning reflection. Students completing this program will be well-prepared to enter employment or continue to pursue postsecondary education in a variety of software driven occupations.

Community-based service projects will be included in the second year of the program. Projects will be obtained from local government, non-profit organizations, the partner school systems, and others. The community projects will be organized to resemble real-world experiences. The community group will meet with a student or a team of students and describe their need. The student or team will develop one or more proposals and arrange to present what they have developed. This meeting will clarify and focus the student project. The revised and completed project will be presented to the community group for their use. As described in the pre-engineering service-learning project, students will have an opportunity to apply skills toward a community need. In addition, they will gain the skills associated with communicating with a "customer" and turning a described need or want into a real and working product. The characteristics of a rural community will limit the opportunity for students to be placed in a community organization or business for an internship or similar experience. Therefore, the community connection for most students must be classroom based. Class visits to businesses and job shadowing opportunities will be pursued when the opportunity is available.

The senior level Nurse Aide Program will be dual enrollment with Rappahannock Community College. In addition to the dual enrollment classes required to complete the Nurse Aide program, high school seniors will have the opportunity to complete up to four dual enrollment classes selected from the Licensed Practical Nurse Program. Students enrolled in this program will complete the clinical experience requirement no later than the summer after high school graduation. The student can then move into the Licensed Practical Nurse (LPN) Program or the Registered Nurse Program on the Rappahannock campus with four classes completed. The Nurse Aide license plus the four completed classes will prepare students for part-timework while completing the Licensed Practical Nurse Program or the Registered Nurse Program.

The Nurse Aide program at Bridging Communities Regional Career and Technical Center will be an extension of the Rappahannock Community College Program. The college nursing staff will guide this program's development and operation helping pave the way for site approval by the state licensure agency. This partnership will make the transfer to the college programs easier for students moving into the LPN Program or the Registered Nurse program.

Delaying enrollment in this program until students are high school seniors provides more time for students to complete a demanding science-based high school program and eliminates any wait time between

completing classroom instruction and participating in the required clinical experience. College partners will work with students guiding them through the required pre-registering requirements to enter the college LPN or Registered Nurse Program.

Many in the health profession consider Nurse Aide as an important prerequisite before enrolling in a Licensed Practical Nurse or Registered Nurse Program. Nurse Aide instruction provides students with essential technical knowledge and on-the-job practical experience. Nurse Aide students also have the opportunity to work with Registered Nurses and other health care professionals. This foundation nursing skill and the work experience serve to reinforce the individual's commitment to the nursing profession.

Nurse Aide is a foundation for many occupational choices or opportunities. In addition to moving into LPN or Registered nursing, the student has many advanced health related occupational choices. Environmental Health, Epidemiologist, other nursing specialty fields, are examples. Nurse Aides may choose to become Emergency Medical Technician (EMT) specialists, Medical Assistants, Athletic Trainers, Psychiatric Aides or enter other specialty health occupations.

All programs offered by Bridging Communities Regional Career and Technical Center, including the Governor's STEM Academy Programs, will have appropriate student organizations. Student organizations provide additional opportunities for students to apply skills outside the classroom and to gain experience beyond the immediate community.

## **Rationale**

The report, "STEM" from the Center on Education and Workforce, indicates that we do not have a clear pathway between high school STEM courses and careers and higher education in STEM fields. The need for this pathway is critical for students planning to enter the community college system or work after high school. The report indicates that most STEM-related effort has been focused on the top students planning on baccalaureate and above degrees. There are many opportunities for students with associate degrees, community college certificates, and for high school graduates in STEM careers. The report considered computer occupations, engineering, and engineering technicians among careers considered STEM. Job opening numbers indicate that 840,000 of 2.4 million predicted STEM jobs will go to persons with less than a bachelor's degree. More than 30 percent of the Virginia STEM jobs will require an associate degree or less. The report authors predict that in 2018 there will be 25,000 STEM-related jobs in Virginia that require a high school diploma, 31,000 that require some college, and 56,000 that require an associate degree. Computer, mathematical-related, engineer, and engineering technician job categories are predicted to have the most jobs in Virginia by 2018 requiring an associate degree or less. STEM-related jobs are predicted to have higher wages at all educational levels than non-STEM jobs. (Why invest in CTE and STEM in High School, *CTEtrailblazers.blogspot.com*)

Similar information was reported by Nicholas Terrell, Economists, Office of Occupation Statistics and Employment Projections, in the report "STEM Occupations." His research indicates that in May 2005, 48 percent of STEM occupations were in computer fields and another 37 percent were engineering-related occupations. STEM workers earned about 70 percent more than the national average in 2005. Earnings are related to required education and demand for workers. Examples presented in the report show that in 2005 engineers earned \$74,670; computer specialists earned \$67,010; all STEM occupations averaged \$64,560 compared to an average salary of \$37,870 for other occupations. Nicholas Terrell reflected the goal of the Governor's STEM Academy when he indicated that high school students who struggle in mathematics and

science can find success in STEM careers. High school teachers must find ways to give the extra assistance in mathematics and science and schools need to guide students toward possible STEM careers. Additional mathematics and science experiences could be found in academics, specialty school clubs, summer camps, and community experiences.

"*Job Outlook By Education 2004-2014 Report*" from the Office of Occupational Statistics and Employment Projections, shows that 16 of the 20 projected fastest growing occupations are in health care and computers. Earnings are higher for workers in computer-related fields such as simulation. Computer-related occupations will add at least 70,000 new jobs between 2002 and 2012. The "Outlook" reports that in 2008, there were 497,300 engineering technician jobs in the United States. Engineering technicians are employed in many occupational groups including manufacturing, service industries, professional, scientific and technical occupations, and in all levels of government. Registered Nurse is expected to be the occupation with the most job openings between 2004 and 2014. Nurse Aide and related occupations such as Home Health Aide occupy three of the top ten positions in a listing of twenty of the fastest growing occupations.

*Occupational Outlook Quarterly (Bureau of Labor Statistics)* reports that science and engineering occupations are expected to provide many high-paying opportunities for persons with the right training. About 370,000 engineering openings are expected between 2004 and 2014 for workers who don't have bachelor's degrees. The rapid growth of information technology will create many openings for people who like working with computers. Computer- and software-related openings for persons with less than a bachelor's degree are expected to total about 324,000 between 2004 and 2014. In this field, credentials, such as industry certification or an associate degree are very important. Computer-related occupations will have earnings that are above the medium for all workers. Sample engineering technician opportunities and computer-related occupations are presented in the table below:

Occupation	Opening for workers without bachelor's degree, 2004-2014 (thousands)	Medium earnings 2004	Training
Electrical/electronic engineering technicians	56	\$46,310.00	Associate Degree
Civil engineering technicians	33	\$38,480.00	Associate Degree
Surveying and mapping technicians	30	\$30,380.00	On-the-job training
Architectural and civil drafters	27	\$39,190.00	Postsecondary vocational award
Industrial engineering technicians	22	\$43,590.00	Associate Degree
Computer support	93	\$40,430.00	Associate Degree
Data communications analysts	52	\$60,600.00	Bachelor's Degree
Computer operators	24	\$31,070.00	On-the-job training

Nurse Aide is essentially a foundation program that provides opportunity of any number of occupations representing all education levels. Nurse Aide graduates have the opportunity to move into Child Care occupations, nutrition-related jobs, public safety assessment jobs, and other areas. A Registered Nurse has almost unlimited health specialty care occupations to consider including emergency care, surgical

specialty, and occupations within the insurance industry. The Health Science Cluster Therapeutic Services Pathway offers programs beginning with Nurse Aide and advancing through more specialized nursing occupations to education, medical doctor, medical research, and other possibilities.

The chart below highlights the tremendous growth that is expected within the Health Science Cluster over the next few years.

Occupation	Anticipated Growth in Occupation Next Eight Years	Medium Earnings 2010	Training
Nurse Aide	Excellent (+22 percent Growth)	\$25,000.00	One Year or Less High School, Community College, or Industry Setting
LPN Nurse	Fast Growth (+21 Percent Growth)	\$39,030.00	One Year in Technical School or Community College
Registered Nurse	Fast Growth (+22 Percent Growth)	\$69,110.00	Community College Associate Degree, Four-Year College Degree, Hospital-Based Program

The Bridging Communities Governor's STEM Academy programs will provide the foundation skills that prepare students for employment or postsecondary education in several specialty areas within each occupation group. This Academy will contribute to the 374,310 persons needed in Virginia for STEM jobs by 2018.

### **Bridging Communities Governor's STEM Academy Partnerships**

Effective partnerships between the Bridging Communities Regional Career and Technical Center and participating school divisions, postsecondary education institutions, business/industry, and others are in place. All partners are committed to making the technical center a site where high expectations create a productive learning environment and create high school graduates with the work skills and academic skills required for postsecondary education. Students will be prepared for success, obtain relevant program credentials, workplace readiness skills, and be confident in their abilities in the workplace or higher education. All partners will provide the energy and time needed to assure this regional center takes its place as a center of quality.

### **Planning Committee**

The Bridging Communities Regional Career and Technical Center Planning Committee is working through the details required to plan and open the facility in September 2012. This committee has assumed the additional responsibilities of creating the STEM Academy. As the Center opens, the Planning Committee will continue functioning as part of the Center Advisory Committee to represent all educational units and other planning partners. The group is committed to high standards, and dual enrollment programs with practical and workplace skills. This committee will guide curriculum development, and the development of a guidance process that links the school divisions, the postsecondary partners, and the Center. The committee will engage in STEM curriculum integration, guide a process for student community placement, and

determine an in-house annual evaluation process. The Planning Committee members are identified in Appendix One.

### **Advisory Committee**

The Bridging Communities Governors' STEM Academy Advisory Committee will be composed of community and business representatives, school division guidance counselors or curriculum specialists, postsecondary educators and economic development and/or Chamber of Commerce agencies. This committee will provide community and business input on curriculum development and lab equipment. This committee's focus will be assuring that the instruction delivered is workplace relevant, meets dual-credit expectations, and is student centered. One task for this Advisory Committee is to work with teachers and Center staff to develop the community connections to the two engineering-related STEM programs. In this role, the Advisory Committee will serve as ambassador for the Center and Governor's STEM Academy. The committee members will communicate with peers in the community to locate partners, provide informal feedback to Center staff, and help to promote the STEM initiative in the five counties. The Advisory Committee members are identified in Appendix Two.

### **Memorandum of Agreement**

The Memorandum of Agreement outlines the responsibilities of the Center and the partners in planning, establishing and maintaining a quality program. The agreement provides a one-year commitment for each partner to support the STEM Academy initiative. This agreement will be revised at the end of the first year reflecting changing program needs as the Academy enters a second year with students preparing to complete the STEM programs and graduate. The signed Memorandum of Agreement is provided in Appendix Three.

### **Statement of Assurances**

The Bridging Communities Governor's STEM Academy Planning Committee has reviewed the Administrative Procedures Guide for Establishment of a Governor's Science, Technology, Engineering and Mathematics (STEM) Academy and agrees to follow the requirements provided in the document. The Bridging Communities Regional Career and Technical Center has in place a Board of Control and Bylaws governing the duties and annual organization of the Board of Control. A signed Statement of Assurances is included in Appendix Four.

### **Fiscal Agent**

New Kent County Public Schools will serve as the Fiscal Agent for the Bridging Communities Regional Career and Technical Center and the Bridging Communities Governor's STEM Academy. Grant funds will be received and dispersed by the New Kent County Public Schools' Director of Finance under the direction of the Center's Board of Control.

### **Program Goals**

Each program goal and program objective indicated in the Administrative Procedures Guide for Establishment of a Governor's Science, Technology, Engineering and Mathematics (STEM) Academy will be listed and explained.

### **1. Incorporate rigorous academic content with career and technical instruction.**

The STEM programs will integrate academic applications, and the curriculum development will infuse the academic principals throughout. For example, whenever a mathematics concept or science concept is involved in the technical curriculum, the instructor will take time to be sure students understand the mathematics or science involved. Principles from the 2004 "Math in CTE Study" will be used to strengthen mathematics in the Academy. Several Web sites have been identified that can be used by instructors to help plan mathematics instruction and to review mathematics concepts. The focus on dual enrollment and the community-experience project will enhance students' academic skills.

### **2. Have an emphasis on STEM career pathways.**

The Pre-Engineering Technology Program and the Modeling and Simulation Program are both STEM programs within the Science, Technology, Engineering and Mathematics Cluster/Engineering and Technology pathway. Nurse Aide requires a strong academic preparation with an emphasis on science, and measurable technology skills. The Health Science Cluster/Therapeutic Services Pathway provides easily recognized steps toward more demanding occupations and many specialty occupational options. Changing health care regulations and changing population demographics will increase the occupational options within this Cluster. The three Governor's STEM programs have dual enrollment partnerships with Rappahannock Community College. This provides a solid connection to postsecondary enrollment for both Clusters.

### **3. Develop individualized high school plans to ensure course selections that are aligned with students' transition and career goals after high school.**

The students' Academic and Career Plans will achieve this goal. Every effort will be given to the students to use the career and interest information gained from Wizard and other career resources. With each student's Cluster of interest or career goal determined, available information will be presented that outlines the academic and technical requirements to meet the career goal. Parents will be encouraged to become knowledgeable of their child's interests, high school options available, and changing workplace expectations to effectively become involved in helping guide the student's individual high school plan.

### **4. Ensure that graduates complete a college and work readiness curriculum for a particular career pathway.**

Determining a working plan for post high school and a related grade nine through twelve program of study for each student will begin in grade seven with the first version of the student's plan in place in grade eight. Guidance staff and Career Coaches will work with students and parents to encourage students to "step up" to a full and rigorous program of study. Students interested in programs at the Regional Technical Center and the Governor's STEM Academy will be pushed to be prepared to take and pass the Virginia Community College System (VCCS) placement test for dual enrollment. Bridging Communities anticipates a competitive process for available seats in the STEM Academy classes.

### **5. Incorporate Virginia's Workplace Readiness Skills for the Commonwealth.**

"Virginia's Workplace Readiness Skills for the Commonwealth" will be a part of the formal curriculum for the STEM Academy programs and all programs in the Bridging Communities Regional Career and Technical Center. Application of the Readiness Skills will occur through the service-learning part of two engineering-based programs. The clinical experience part of Nurse Aide instruction is a "real" introduction to

workplace expectations and soft skills required for success. Student organizations and business contacts will provide additional opportunities for students to learn and apply Workplace Readiness Skills. Any student taking a Career and Technical class in grades eight through ten in their home high school will have been working with the Workplace Readiness Skills. In the second year of the program, students will take one of the available Workplace Readiness Skills Assessments.

## **Program Objectives**

### **1. Improve academic achievement of students in the Academy.**

**One hundred percent of the students enrolled in the Academy will pass their Standards of Learning (SOL). From the 2013-2014 baseline data, the Academy students' SOL success rate will improve one-half percent per year until one hundred percent is reached.**

The Academy programs will set high expectations for student achievement. Small class size, applied academic reinforcement, linking academics to a specific skill, and the community experience will combine to improve student achievement. Data collected will include the college placement test scores (or PSAT/SAT waiver numbers) taken in grade ten by students requesting to enter the dual credit program. Data collected in spring 2013 will become the baseline. Compiled scores for subsequent years will be compared to the baseline data to gauge academic improvement in the home high schools. Data will be collected and reported for Bridging Communities. A second data set will be SOL mean scores compiled in spring 2014 to determine a baseline for Geometry, Algebra II, eleventh-grade reading, and eleventh-grade writing. Compiled scores for subsequent years will be compared to the baseline to determine academic gain. Data will be collected and reported for Bridging Communities. Each school division will have access to data reflecting student achievement in that division. Division counselors, curriculum specialists, and principals will add this data to other available data that is evaluated and used to develop improvement strategies.

### **2. Increase completion of dual enrollment courses.**

**One hundred percent of the Academy students will meet dual enrollment requirements no later than the second semester of their senior year.**

One key to completion is student motivation. We believe that as each high school focuses more attention on students' Academic and Career Plans, students coming to the Center will know more about their chosen program and the possible workplace awards. Small classes in the Center will make identifying struggling or unmotivated students easier. Additional attention will be given to struggling students at the Center and in their home high school. Additionally, the Regional Technical Center is working with Rappahannock Community College to provide a senior year, second opportunity for students to enroll in dual enrollment. This option would give the students high school credit for their junior year and dual credit for the second year of a program. VCCS placement test prep will be built into the first year curriculum of all Bridging Communities Regional Career and Technical Center classes. The Bridging Communities Regional Career and Technical Center, the partner community colleges, and the participating school divisions each have a stake in making sure students complete programs. The number of students enrolling in all programs and the number of students returning for the second year will be evaluated each year.

### **3. Provide workplace readiness experiences for students through strong partnerships with business.**

**One hundred percent of the students enrolled in Pre-Engineering Technology and Modeling and Simulation Programs will complete a service-learning experience. Successful service-learning placement**

**will increase at least one percent each year from the spring 2014 baseline data until the one hundred percent goal is met. One hundred percent of the Nurse Aide students will complete the clinical experience requirement.**

Governor's STEM Academy students will have opportunities to participate in workplace readiness experiences including field trips, guest speakers, service-learning projects, and other community experiences. Connecting students to the community helps make the instruction real, provides the possibility for summer or full-time employment, and builds community support for the Center. Opportunities for workplace readiness will increase as students are placed and the community learns what students can accomplish. Students in the Pre-Engineering Technology Program and in the Modeling and Simulation Program will be assigned community projects during the spring of 2014. The option will be available for students in the first year of each program to complete a service-learning experience. An evaluation form will be developed and given to the community business or organization to evaluate each student's work and demonstrated work readiness skills. Students will also be asked to evaluate the community experience and suggest improvements. This information will be analyzed each year to determine service-learning and/or curriculum adjustments.

#### **4. Increase high school graduation rates.**

**One hundred percent of the Governor's STEM Academy students will graduate on time.**

Students participating in the Governor's STEM Academy may find the classes offered more interesting than academic classes. Students may be more likely to see the value of the classes offered at the Governor's STEM Academy in preparing them for careers of interest. Governor's STEM Academy classes can clarify the value of academic classes by specifying the skills needed to succeed in careers of interest and thereby lead students to see a greater value associated with staying in school and graduating on time. Governor's STEM Academy classes and increasing career exploration in each home high school will encourage students to carefully define career goals and will keep them more engaged in school.

#### **5. Reduce dropout rates.**

**No Governor's STEM Academy students will become dropouts. The dropout percentage in each of the five county high schools will be reduced by one-half percent per year.**

The educational opportunities provided to students through the Governor's STEM Academy empower students by providing a range of learning opportunities that serve different learning styles. The STEM Academy relies on a powerful mode of teaching and learning both in classrooms and in workplaces. For many students, applying academic and technical skills to real-world activities, using computers and other tools, and being able to see how their learning is related to the world of work make classes more interesting and motivating, and more educationally powerful than standard academic classes. A career focus often gives students a sense of direction and motivates them to achieve and to stay in school. Practically inclined students can be hooked on academic learning through participating in Governor's STEM Academy courses. Having the option of being able to concentrate in a STEM Academy in high school results in more young people staying in school because more relevant choices are available to them. The numerous connections with community individuals, postsecondary staff, and Regional Technical Center staff create individual mentors for students. The dropout rates from the five school divisions will be averaged to determine the

Bridging Communities data. The 2013-2014 dropout data will become the baseline data for Bridging Communities.

**6. Increase enrollment and retention in postsecondary education.**

**Eighty-eight percent of the Governor's STEM Academy students will be enrolled in postsecondary education directly out of high school as reported by each school's guidance department to VDOE. Each year the percent of Governor's STEM academy students moving directly from high school to postsecondary will exceed the school division's percentage.**

Through a partnership between the Governor's STEM Academy and postsecondary educational institutions (i.e., Rappahannock Community College, J. Sargeant Reynolds Community College), opportunities are made available to students to enroll in postsecondary education during their high school experience. This arrangement gives students the opportunity to experience college success and build the confidence needed to enroll in postsecondary education after high school graduation. Students who participate in dual enrollment are more likely to enter and persist in postsecondary education programs because they have confirmed an interest and career goal. Additionally, dual enrollment saves both time and money, promoting efficiency of learning (reduced repetition in grades 11-14), enhancing admission to and retention in college, and increasing the likelihood of timely graduation from college.

**7. Increase the proportion of students completing a college and workplace ready curriculum in high school.**

**One hundred percent of the students enrolled in the Governor's STEM Academy will complete a college and workplace ready high school curriculum. CTE follow-up will determine the percent of Academy students enrolled in postsecondary and/or skilled employment.**

All students completing a Governor's STEM Academy program will be college and workplace ready. The process that makes this possible begins in middle school when students are introduced to exciting career opportunities and a different instructional model. This is followed by introducing the STEM Academy programs and expectations through application units of science, mathematics, and technology that are infused into technical and academic classes in middle and high school. The STEM-related units may be the first time students are able to make a connection between a STEM subject and their life and interests. Continuing work with the students to refine their Academic and Career Plans will assure that genuine interest and aptitude are demonstrated for the STEM Academy program. When entering a STEM Academy class the student begins working on a possible college program. One role of dual enrollment must be to help the students realize what they can academically achieve and the opportunities that additional education offers. Other students in grades eight and above who experience the infused STEM units may find career interests and believe in their capacity for postsecondary education. This could lead them to any imaginable occupation and the postsecondary institution providing the education needed for that occupation.

**8. Reduce the proportion of students requiring remediation in college.**

**One hundred percent of the Governor's STEM Academy students will be academically ready for college as indicated by the Rappahannock Community College and the J. Sargeant Reynolds Community College dual enrollment assessment.**

Governor's STEM Academies are high expectation centers, therefore, this small population should be academically ready for college. The real impact is the change in instruction in all grades as practical STEM applications are introduced. The number of STEM-applied concepts is expected to increase as more teachers become involved and are provided the in-service time to develop the units. For many students finding a connection between class content and their interests is a critical link to academic success. The second essential connection is applying the STEM concept; moving from theory to application. The critical elements in improving academic skills are creating early success for each student and giving each student a reason to learn.

**9. Increase the number of industry certifications awarded to high school students.**

**One hundred percent of the Governor's STEM Academy students and Bridging Communities Regional Career and Technical Center will earn an appropriate industry certification. From baseline in spring 2014, this percentage will increase five percent per year until all students are successful.**

All students attending the Bridging Communities Regional Career and Technical Center will be expected to take a certification or licensure test and be successful. This expectation will be set early in the student's first year. Students will understand the value of the certification or license to their occupational goals. Student certification success in each STEM and other programs will be monitored. Instruction adjustments will be made as needed to address all elements of the certification or licensure test.

**10. Increase the number of graduates employed in high-wage, high-demand, and high-skill careers.**

**One hundred percent of the Governor's STEM Academy students will be employed in high-wage, high-demand, high-skill jobs. Data will be based on the annual CTE follow-up and percent of students that can be surveyed four or more years after high school graduation.**

Employment in high-wage, high-demand, and high-skill careers requires high-level education. The STEM Academy will emphasize the need for students' attention to high school academic classes and will provide students a high-expectation technical education program. The dual enrollment opportunity will make the transition to postsecondary easier and seamless. The Academy and the partner college will work to be sure that curriculum remains relevant to the changing workplace and provides the skills levels needed.

**Evidence of Participation in the Governor's Exemplary Standards Award Program for Career and Technical Education**

Bridging Communities will begin participating in the Virginia Career Education Foundation Governor's Exemplary Standards Award program in the spring of 2014 as the first Academy class is completing programs. The recognition that this award would bring to the Governor's STEM Academy would be exciting and the program improvement financial award would permit the program(s) to accelerate growth plans.

**Programs and Course Descriptions**

**Science, Technology, Engineering & Mathematics Cluster/Engineering and Technology Pathway  
Pre-Engineering Technology Program**

Pre-Engineering Technology will be a two-year program offering a senior level dual enrollment class. Essential competencies from the three technical education classes completed in year one and the Intelitek

Engineering Curriculum will be merged to teach using robots as the learning tool. Students will integrate and apply mathematics and science applications through engagement in robotics instruction. Students will learn a STEM concept and immediately apply that concept to the design, construction, and programming of a robot. The curriculum will be designed to provide classroom competition between robotics teams. Students will test design ideas and build interest in STEM concepts related to the robot design and performance. Co-curricular and extra-curricular student experiences such as regional and state competitions will enrich student learning.

The second year of this program will include two dual enrollment classes offered through Rappahannock Community College. Students will take EGR 120 - Introduction to Engineering and EGR 135 - Statics for Engineering Tech plus complete a community service-learning experience. This second class will introduce students to additional engineering concepts. This two-class program will prepare students to enter any of the many engineering technology programs in the area or to pursue an engineering degree in a four-year university.

The classroom instructor, school facility and staff, and STEM professionals will help students determine a service-learning project that will be completed during the course. Students will partner with an individual or group to research a local issue or problem and will develop a possible solution. This service project will develop students' communication, leadership, and problem-solving skills, and link classroom instruction to real-world, STEM focused applied scenarios. Selected service projects will be an opportunity for students to focus engineering concepts to problems important to them. In addition, the connection from the course to the local community and to area STEM professionals will be made. Students will have at least one opportunity to formally present service-learning project results. Twenty-first Century Skills will complement the STEM curriculum and will better prepare students for postsecondary education and for future employment.

### **Modeling and Simulation Program**

This two-year program will provide students with six high school credits and twenty-six college credits. This software driven program is designed to provide students with entry-level skills in both high demand current occupations and in the high demand emerging modeling and animation occupations. Additionally, the software and occupation mix is designed to be appealing to both male and female students. Digital arts will dominate the first year of this program with enough modeling introduced to create interest. Year two will focus on 3D architectural modeling using 3D Studio Max software. Students will practice creating architectural 3D models, adding motion, editing materials, and they will be introduced to game development.

In the spring of the second year, students will complete a community service learning activity. Students, advisory council members, and school staff will obtain community projects involving digital design, modeling, or other projects relevant to the program competencies. Non-profit organizations, government agencies, and the school systems are likely sources of projects for students to complete. As indicated in the Pre-Engineering/STEM program, most service projects will be completed within the school lab because the rural communities limit opportunity for community placement near the Technical Center or the students' home school. However, students will meet with persons from the organization needing the service to determine what is needed, to present proposals to solve the identified need, and a third time to present the final product. Students will use Microsoft products to create a portfolio documenting their skills and activities/projects completed, plus a written reflection of the service-learning experience.

This program provides students with many choices as they plan their postsecondary experience or plan to enter the work force. Skills learned in this program are relevant to database design, computer systems analysis, computer programming, and simulation/modeling implementation. Modeling and simulation is an important part of military simulation and training, product design, chemistry and medical research, health care, multimedia artists and animators, education, corporate, medical, and other occupations.

Students completing this dual credit program will have a choice of industry certifications. At the end of the first year, the Dreamweaver certification test will be one certification option. The Brainbench 3D certification is one example of the certification options for students completing year two of the program.

### **Health Science Cluster/Therapeutic Services Pathway Nurse Aide Program**

This is a senior level, dual enrollment partnership with Rappahannock Community College. The instructor will be hired by Bridging Communities Board of Control, but will meet all college staff requirements for teaching Nurse Aide. College staff is providing input into the Bridging Communities nursing lab design and equipment. The goal is to develop a lab that can serve more advanced nursing instruction. This provides options for changing the program in the future and would provide an additional lab for college use in the evening.

Students will start the required clinical experience for this program during the school year, completing the required hours during the summer after high school graduation. The college nursing staff will be involved in helping determine sites and scheduling the student's clinical experience. Available sites and hours for the clinical experience must be mated with the clinical experience needs of students completing the Nurse Aide Program on the Rappahannock campus.

Instructional time is available to meet all hours required for Nurse Aide plus four dual enrollment classes required in the LPN Nurse or Registered Nurse Programs. As this program becomes established in the five participating school divisions students interested in nursing will have the opportunity to design a high school program of studies that gives them a significant start on the college LPN Nurse or Registered Nurse Programs. In addition to earning the Nurse Aide license plus the four additional dual enrollment nursing classes, students can design a program of studies in grades nine through eleven that meets Rappahannock entrance requirements for LPN Nursing Program or Registered Nurse Program. The requirements include high school chemistry, biology, computer proficiency, and mathematics.

### **STEM Academy Related**

One planning goal for this Regional Technical Center is creating a schedule and travel schedule that provides maximum time in the home high school for students to complete academic requirements for advanced studies programs. Today's and tomorrow's work skills must include strong academic skills and a student's technical education program cannot limit opportunity to prepare for postsecondary education. Additionally, making sure that students can participate in home school activities such as clubs and social events eliminates one reason that students choose not to participate in regional programs. Therefore, one challenge for the Regional Technical Center staff is to build an easily seen connection between the Regional Technical Center's high expectation programs and a student's opportunity for high-wage employment and or

postsecondary education. Also, active Regional Technical Center student organizations and other center-based student events will build student enthusiasm for the facility.

Another goal of the Governor's STEM Academy is to provide STEM applications in at least one class in grades eight through ten. In the 2012-2013 school year, each school division will select one teacher/class to participate in professional development and curriculum development. Teachers will be guided to develop mathematics, science, and technology units to infuse into their course(s). Applied learning using robotics, modeling or other academic/technical application will be used in the selected class units to increase students' interest in STEM. Current class activities will be enhanced by adding more rigorous STEM concepts. The goal is to expand this concept each year to include more teachers and their classes in the development and application of applied STEM concepts.

### **Length of Program and Daily Schedule**

Governor's STEM Academy programs will be offered in Bridging Communities Regional Career and Technical Center. The Center will be available for juniors and seniors and will operate on a traditional schedule, permitting students to earn three high school credits each year. Bridging Communities school divisions will make adjustments in their high school schedules to minimize time lost traveling to and from the Regional Technical Center. Service-learning and Nurse Aide clinical experience will require students to make contact with community businesses or organizations. Most of the work within the service-learning program will be completed in the Center's labs. Nurse Aide clinical experience may be scheduled in the evening, on Saturdays and during the summer.

### **Assurance from the Financial Agent that operating funds and facilities are available to support the Governor's STEM Academy and are adequate to meet the needs of the program.**

The Bridging Communities Regional Career and Technical Center Planning Committee, Finance Committee, and Board of Control are confident that a budget is in place to establish and operate the Center. Funds have been approved by the New Kent County Board of Supervisors to renovate the facility. The New Kent County Public Schools' Director of Finance will serve as the Technical Center financial agent. The assurances statement is located in Appendix Four.

### **Materials and Equipment to be Provided to Accomplish Program Goals and Objectives**

The Regional Technical Center's opening budget and student costs for the first two years of operation have been reviewed by the Planning Committee and Finance Committee several times. Each school division is comfortable with both the annual per-pupil cost and the total annual division cost. The opening budget includes equipment funds, start-up costs, and funds for instructional supplies. The state-approved equipment lists will be used as a guide in determining equipment for each lab in the Regional Technical Center. The equipment needs in each lab is evolving as curriculum is finalized. After the first year of operation the Regional Technical Center will have an annual equipment budget to enhance equipment in each lab. Consumable material costs are calculated into per-student cost for operating the Regional Technical Center. The State of Operating Funds and Facilities Assurance is located at Appendix Five.

## **Evidence of an Internal Evaluation Process to Effect Program Improvement**

Bridging Communities school divisions expect the Regional Technical Center and the Governor's STEM Academy to be a success and it will be monitored closely to make immediate adjustments as needed. Data that will be annually collected and analyzed include:

Objective 1: Improve academic achievement of students in the Academy.

- a. SOL mean scores for Geometry, Algebra II, and eleventh-grade reading and writing will be collected in spring 2014 and will become baseline data.
- b. CTE follow-up data will be collecting this data for the Center beginning with the graduating class of 2013-2014.
- c. Annually, gender and race statistics will be determined for each Regional Technical Center program.

Objective 2: Increase completion of dual enrollment courses.

- a. Number of students requesting dual credit enrollment in STEM Academy programs and final number entering dual enrollment in grades eleven and twelve will be collected.
- b. The number and percent of students returning the second year to complete programs will be collected.

Objective 3: Provide workplace readiness experiences for students through strong partnerships with business.

- a. Community and student feedback from each student's service-learning experience will be collected.
- b. Feedback from the Nurse Aide clinical experience will be collected and evaluated.
- c. Number of students eligible for service-learning compared to the number successfully completing a service-learning experience will be determined each year.
- b. Annual Center and program evaluation by program instructors will be collected.

Objective 4: Increase high school graduation rates.

- a. The number of Academy students completing one of the programs in the Regional Technical Center and graduating will be determined, and the graduating class of 2013-2014 will be the baseline.

Objective 5: Reduce dropout rates.

- a. The number of Academy students completing one of the programs in the Regional Technical Center and graduating will be determined, and the graduating class of 2013-2014 will be the baseline.
- b. Participating school division dropout data for the 2013-2014 school year will be determined and will become the Academy baseline data.

Objective 6: Increase enrollment and retention in postsecondary education.

- a. The annual CTE student survey data will be collected for the Regional Technical Center beginning with the 2013-2014 graduating class.
- b. Classroom survey of Academy students during spring of the senior year to determine plans after graduation will be conducted annually. The 2013-2014 school year will be the baseline.
- c. Students' postsecondary plans will be collected from each school division.

Objective 7: Increase the proportion of students completing a college and workplace ready curriculum in high school.

- a. Use the annual CTE student survey to determine the number of students graduating from STEM Academy programs who are enrolled in postsecondary education and/or engaged in program-related occupations.
- b. Annually determine the number of sophomore students taking and passing the VCCS placement test for dual enrollment in Academy programs.

Objective 8: Reduce the proportion of students requiring remediation in college.

- a. VCCS placement tests results for Academy students will be collected each school year.

Objective 9: The number of industry certifications awarded to high school students will increase.

- a. Annually determine the number of industry certifications or occupational licenses earned in Academy programs and in all other Regional Technical Center programs.

Objective 10: Increase the number of graduates employed in high-wage, high-demand, and high-skill careers.

- a. CTE follow-up data will be collected for the Regional Technical Center with the graduating class of 2013-2014.
- b. Data that can be collected from students four years after graduation will be evaluated to determine occupation or graduation goal.

## **Administrative Procedures**

**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.**

Business and industry partners will help guide curriculum development, will assist with service-learning activities, will serve as classroom speakers, and promote the Regional Technical Center activities and programs within their various professional and civic organizations. The Regional Technical Center's five school divisions have been working for years to make this technical center possible. The superintendents and Board of Control members are committed to the success of the Center and to the expectation of high standards and quality instruction leading to employment or postsecondary education. Each school division had staff involved in writing this grant and are dedicated to implementing STEM concepts in their home

school division and in the Regional Technical Center. Rappahannock Community College has been involved in the planning process from the beginning. College personnel have devoted hours working with Bridging Communities to develop appropriate dual enrollment opportunities. J. Sargeant Reynolds Community College staff have worked with the Center Director to establish the Diesel Technology Program, including providing expertise in renovating the lab space, providing equipment recommendations, and donating equipment. The staff of both colleges and the Bridging Communities staff see the Center programs as an opportunity for secondary and postsecondary. The West Point Economic Development Coordinator is a member of the STEM Advisory Committee. This person will bring his knowledge of business and their needs in the area and will serve as a resource locating service-learning opportunities within the town.

#### **B. Student Recruitment, Selection Criteria, and Admissions**

Career planning for all students will begin in the seventh grade as students begin developing their Academic and Career Plans. At this time students will be made aware of the programs offered in the Regional Technical Center and career opportunities offered. The Regional Technical Center will be promoted to the 2012-13 class using print materials and personal contacts. After the Regional Technical Center is operating, visits by interested tenth-grade students will be arranged. Also, video and Web information will become available after the Regional Technical Center is operating. Students in the Modeling and Simulation Program can be involved in this promotion effort by creating digital media. Admission to the Regional Technical Center and to the STEM Academy programs will be based on division ratios and a competitive application process. The application process will include an application package with teacher recommendation, copy of the student's transcript, disciplinary and attendance data, and community college entrance data. Guidance staff will use this data to determine the school division's student allotment of students who may attend the Regional Technical Center.

#### **C. Code of Student Conduct and Attendance**

The Student Code of Conduct for the Regional Technical Center and the Governor's STEM Academy will be developed by the Bridging Communities Planning Committee modeling the policies within the five participating school divisions and considering the unique needs of a regional facility. The handbook will be updated annually based on legal updates, facility needs, and feedback from school division staff members. Students will be governed by the policies within their home school division, policies unique to the Regional Technical Center, and by Virginia Community College policies.

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

All students attending the Bridging Communities Regional Career and Technical Center will be transported to and from the Regional Technical Center by each school division's transportation services. During the 2012-13 school year, transportation will involve only a morning schedule. Beginning with the 2013-2014 school year, school buses will transport students to and from the Regional Technical Center on the established morning and afternoon schedule. The participating school divisions will develop a process to provide approved transportation for field trips and other off-site activities.

#### **E. Staff Recruitment, Selection, and Assignment - The Governor's STEM Academy shall hire personnel 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.**

Bridging Communities Board of Control recognizes that quality staff is critical in establishing a high-performance Regional Technical Center and Governor's STEM Academy. All staff hired will meet Virginia licensure requirements and Virginia Community College requirements. Staff will have demonstrated program specific experience and a willingness to continue professional development. Willingness to broaden instruction using community connections will be a hiring consideration. Certain staff will be a joint hire involving the Bridging Community Board of Control and appropriate Rappahannock or J. Sargeant Reynolds staff. Bridging Communities expects all students to leave the Center with industry certification. Therefore, all staff must have or obtain the needed industry certification.

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

A comprehensive and continuing plan for staff development will be implemented for all Bridging Communities staff that includes locally-developed activities, required external activities including summer professional development conferences and graduate classes focused on continued growth. Funds are anticipated to provide in-service connected to the infusion of mathematics and science competencies into the curriculum of the STEM Academy programs. In addition, STEM Academy staff will work with postsecondary professionals to develop STEM pre-engineering-connected instructional units that will be infused into classes in grades eight through ten in each school division. The annual staff development process and changing workplace needs will guide future professional development needs/requirements.

**G. Staff Evaluation - Staff will be evaluated according to the human resources policies of the agency or institution employing Academy personnel.**

All Bridging Communities Regional Career and Technical Center staff will be evaluated using an instrument and process approved by the Board of Control. The process will include formal classroom observations with pre- and post-conferences, numerous classroom "walkthroughs" with feedback, and a summative evaluation with goals established for the next school year. Formal improvement plans will be implemented if corrective measures are needed. The Human Resources Department from one of the Bridging Communities school divisions will assist Regional Technical Center staff in the evaluation process.

**H. Parent, Student, and Community Involvement**

**1. Preparation for entering the Academics should begin by eighth grade.**

The Academic and Career Plan will be in place for each student in Bridging Communities by the beginning of the eighth grade. Guidance staff in each school division will use Wizard and other resources to provide each student with an interest inventory. Students will have the opportunity to match skills and interests to programs offered in the Regional Technical Center. Pre-Engineering-related STEM units will be in place in at least one eighth-grade class in each school division. The Bridging Communities focus on "college and career" ready will influence the development of a student four-year program of studies.

**2. Students, parents, teachers, and counselors should work collaboratively to:**

- a. Complete career interest inventories;**
- b. Prepare academic and career plans outlining an intended course of study in high school;**

- c. Review multiple postsecondary pathways and the steps required to pursue them;**
- d. Participate in career assessments to identify areas students should strengthen to qualify for their selected pathway; and**
- e. Discuss available diplomas seals, and other recognitions, as well as the requirements for admission to specialized programs including Governor's Academies.**

Each Bridging Communities school division is implementing the Academic and Career Plan that includes each of the elements outlined above. Beginning in grade seven, counselors will begin helping students determine interests and aptitudes and determine possible clusters that match the identified interests and aptitudes. Parents will have an opportunity for input and are expected to have a voice in helping determine a four-year program of studies for their child. This discussion includes expectations for each of the diploma options, and school electives including CTE and the Governor's STEM Academy. Beginning in grade nine, counselors, career coaches, and other school staff will help the student refine career plans, possible pathways and explore opportunities along the pathway. In grade ten, students will begin seriously thinking about post high school. Post high school will include the various options for formal education and workplace based education such as apprenticeship. The students' goals will annually be reviewed and connected to program offerings in the school system including the Governor's STEM Academy and other high school specialty options. For many students the decisions concerning high school options including the advanced diploma options must be made in grade eight.

**I. Documentation that insurance and other fiscal information will be provided.**

The Bridging Communities Regional Career and Technical Center will have adequate insurance using the recommendations of the insurance carrier selected by the Board of Control. As the Center prepares to open, this information and other required fiscal information will be available on request.

## Bridging Communities Governor's STEM Academy Budget

### 1. Personnel (1000)

Teachers \$78,000.00

Each STEM Academy program will require a one-half time teacher for the 2012 school year.

Staff will be funded by Bridging Communities.

### 2. Employee Benefits (2000)

\$27,300.00

The required fringe benefits are estimated to be thirty-five percent of salary.

This staff expense will be funded by Bridging Communities.

### 3. Purchased and Contracted Services (3000)

Print Governor's STEM Academy promotion materials \$1,000.00 (grant funds)

Consultant to help STEM Academy teachers and high school  
teachers develop STEM units \$3,500.00

Funds provided by Bridging Communities.

### 4. Internal Service (4000)

None

### 5. Staff Development (5000)

\$4,000.00 (grant funds)

Funds will be used for professional development involving Governor's  
Academy instructors and staff from each school division working on STEM  
units to include in grades eight through ten classes.

### 6. Summer Component Activities (5000)

Curriculum work during the summer of 2012, continuing development of  
STEM units for classes and STEM program curriculum refinement \$6,000.00

Funds provided by Bridging Communities.

### 7. Travel (5000)

\$3,000.00

Travel will be required for teachers to professional development activities,  
advisory committee activities, service-learning activities, and other program  
needs.

This need will be funded by Bridging Communities.

### 8. Contractual Services (5000)

none

### 9. Materials and Supplies (6000)

Software for labs \$23,450.00

Consumables for labs \$ 7,000.00

**10. Equipment (8000)**

Computers, printers for the two labs	\$45,000.00
Furniture for labs	
(Major equipment for nursing lab will be donated)	\$ 9,400.00

This need will be funded by Bridging Communities.

**11. Facilities (8000)**

Renovation of the three labs is included in the Regional Technical Center facility renovation budget.

**BRIDGING COMMUNITIES GOVERNOR'S STEM ACADEMY BUDGET SUMMARY**

<b>BUDGET CATEGORIES</b>	<b>STEM GRANT FUNDS</b>	<b>PERKINS FUNDS</b>	<b>BRIDGING COMMUNITIES FUNDS</b>	<b>In-Kind</b>
1. Personnel (1000)			\$78,000.00	
2. Employee Benefits (2000)			\$27,300.00	
3. Purchased/Contractual Services (3000)	\$1,000.00		\$ 3,500.00	
4. Internal Services (4000)	-----	-----	-----	
5. Staff Development (5000)	\$4,000.00			
6. Summer Component Activities (5000)			\$ 6,000.00	
7. Travel (5000)			\$ 3,000.00	
8. Contractual Services (5000)	-----	-----	-----	
9. Materials and Supplies (6000)			\$30,450.00	
10. Equipment (8000)			\$54,400.00	
11. Facilities (8000)			In renovation	

Note: Perkins funds will not be available until the Regional Technical Center's second year of operation.  
No identified In-Kind funds.

## APPENDIX ONE

# Bridging Communities Governor's STEM Academy Planning Committee

**BRIDGING COMMUNITIES GOVERNOR'S STEM ACADEMY PLANNING COMMITTEE**

<b>NAME</b>	<b>AFFILIATION</b>	<b>TITLE</b>
Dr. James Lane	Middlesex County Schools	Superintendent
Jim Goforth	Middlesex County Schools	School Board Member
Dr. Mark Jones	King William County Schools	Superintendent
Kathy Morrison	King William County Schools	School Board Member
Charles Clare	King and Queen County Schools	Superintendent
Brenda Lee	King and Queen County Schools	School Board Member
Dr. Robert Richardson	New Kent County Schools	Superintendent
Dr. Gail Hardinge	New Kent County Schools	School Board Member
Dr. Janet Crawley	Charles City County Schools	Superintendent
Walter (Petie) Norris	Rappahannock Community College	Dual Enrollment Coordinator
Jason Perry	Rappahannock Community College	Workforce Development
Charlie Gordon	Town of West Point	Town Council Member
Melvin Robertson	Charles City County Schools	Director Administrative Services
Nate Collins	New Kent County Schools	Executive Director Curriculum and Instruction
Terry Bailey	King William County Schools	Director of Curriculum and Assessment

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization Middlesex

Contact Information (Print)

Name James Lane

Title/Position Superintendent

Address PO Box 205  
Saluda, VA 23149

Telephone Number 804-758-2277

E-Mail jlane@meps.k12.va.us

Signature James Lane

Date 1/5/11

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization

Middlesex

Contact Information (Print)

Name

Jim Goforth

Title/Position

Board Member

Address

110 Riverboat Lane

Hartfield, VA. 23071

Telephone Number

804-776-9245

E-Mail

01promotions@gmail.com

804-815-1737 (cell)

Signature

Jim Goforth

Date

1/10/12

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization King William County

Contact Information (Print)

Name Mark Jones

Title/Position Superintendent

Address P.O. Box 185

King William, VA 23086

Telephone Number 804-769-3434 x 510

E-Mail m.jones@kweps.k12.va.us

Signature Mark R. Jones

Date 1-5-12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization King William County Schools

Contact Information (Print)

Name Kathy Morrison

Title/Position School Board Chair

Address P.O. Box 185

King William, VA 23086

Telephone Number 804-769-3434 x501

E-Mail kmorrison@kwcp.s.k12.va.us

Signature Kathy Morrison

Date 1/10/12

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

#### Partner School

Division/Institution/Organization King & Queen County Public Schools

#### Contact Information (Print)

Name Charles L. Clare

Title/Position Superintendent

Address King & Queen County Schools

P.O. Box 97

King & Queen C.H., VA 23085

Telephone Number (804) 785-5981

E-Mail cclare@kqps.net

Signature 

Date 1/5/12

Bridging Communities Governor's STEM Academy

Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization King and Queen County

Contact Information (Print)

Name Brenda D. Lee

Title/Position Special Ed. Teacher

Address 157 Bob Cat Lane  
Little Plymouth  
Va. 23091

Telephone Number H# 804-785-2677 Cellphone # 804-824-4425

E-Mail brenda lee teach@yahoo.com

Signature Brenda D Lee

Date 2-23-2012

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization NEW KENT COUNTY PUBLIC SCHOOLS

Contact Information (Print)

Name DR. ROBERT F. RICHARDSON, JR.

Title/Position SUPERINTENDENT

Address P.O. BOX 110

NEW KENT, VA 23124

Telephone Number 804-966-9650

E-Mail RRICHARDSON@NKPCS.K12.VA.US

Signature R Richardson

Date 1/10/12

Bridging Communities Governor's STEM Academy

Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization NEW KENT CO. SCHOOLS

Contact Information (Print)

Name DR. GAIL B. HARDINGE

Title/Position SCHOOL BOARD - NEW KENT

Address P.O. Box 110

NEW KENT, VA

Telephone Number 804.586-7057 (cell) 757-221-2361 (work)

E-Mail gharding@nkcps.k12.va.us

Signature G B Hardinge

Date 1/10/12

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization Charles City County

Contact Information (Print)

Name Janet C. Crawley

Title/Position Superintendent of Schools

Address 10910 Courthouse Road

Charles City, VA 23030

Telephone Number 804-652-4612

E-Mail jc.crawley@co.charles-city.va.us

Signature Janet C. Crawley

Date 1/5/12

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization Rappahannock Community College

Contact Information (Print)

Name Walter Norris

Title/Position Dual Enrollment Coordinator

Address 52 Campus Drive  
Warsaw, VA 22572

Telephone Number 804-333-6752

E-Mail wnorris@rappahannock.edu

Signature Walter Norris

Date 1/5/12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization RAPPANNOCK COMMUNITY COLLEGE

Contact Information (Print)

Name JASON PERRY

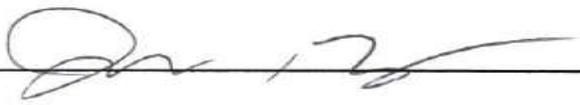
Title/Position VICE PRESIDENT - WORKFORCE DEV.

Address 12745 COLLEGE DRIVE

GLENNS VA 23149

Telephone Number 804-758-6751

E-Mail jperry@rappahannock.edu

Signature 

Date 1-10-12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization WEST POINT, TOWN COUNCIL

Contact Information (Print)

Name CHARLES D. GORDON

Title/Position WEST POINT, TOWN COUNCIL

Address 3520 SOUTHERN AVE.

WEST POINT, VA. 23181

Telephone Number H. 804-843-2009. Cel. 804-241-4283

E-Mail \_\_\_\_\_

Signature Charles D. Gordon

Date 01/10/2012

Bridging Communities Governor's STEM Academy

Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization

Charles City County

Contact Information (Print)

Name

Delvin D. Robertson

Title/Position

Director for Administrative Service

Address

10910 Courthouse Road  
Charles City, Va. 23030

Telephone Number

(804) 652-4649

E-Mail

mdrobertson@co.charles-city.va.us

Signature

Delvin D. Robertson

Date

January 5, 2012

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization NEW KENT COUNTY PUBLIC SCHOOLS

Contact Information (Print)

Name NATE COLLINS

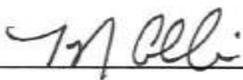
Title/Position EXECUTIVE DIRECTOR OF CURRICULUM AND INSTRUCTION

Address P.O. Box 110

NEW KENT, VA 23124

Telephone Number 804. 966. 9636

E-Mail ncollins@nkcps.k12.va.us

Signature 

Date 1-5-12

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization King William County

Contact Information (Print)

Name Terry Bailey

Title/Position Director of Curriculum and Assessment

Address 18548 King William Rd.

King William, Va. 23086

Telephone Number 804-769-3434

E-Mail tbailey@kweps.k12.va.us

Signature Terry Bailey

Date Jan. 5, 2012

## APPENDIX TWO

Bridging Communities Governor's

STEM Academy

Advisory Committee

**BRIDGING COMMUNITIES GOVERNOR'S STEM ACADEMY ADVISORY COMMITTEE**

<b>NAME</b>	<b>AFFICATION</b>	<b>TITLE</b>
Terry Bailey	King William County Schools	Director of Curriculum and Assessment
Nate Collins	New Kent County Schools	Executive Director Secondary Education
Shawn Hershberger	Town of West Point	Economic Development Coordinator
Melvin Robertson	Charles City County Schools	Director of Administrative Services
Gloria Washington	King William County Schools	Guidance Counselor
Kitty Green	New Kent County Public Schools	Career Coach
Eric Hendrixson	Dominion Resources Services	Director Nuclear Engineering
Joey Saunders	J. Sanders Construction Co.	Owner
Lorianne Smith	King and Queen Schools	Director of H.R. and Instruction
Jennifer Smethurst	New Kent High School	School Counselor
Dr. Donna Alexander	Rappahannock Community College	Vice President, Academics

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

#### Partner School

Division/Institution/Organization King William County

#### Contact Information (Print)

Name Terry Bailey

Title/Position Director of Curriculum and Assessment

Address 18548 King William Rd.  
King William, Va. 23086

Telephone Number 804-769-3434

E-Mail tbailey@kwcps.k12.va.us

Signature Terry Bailey

Date Jan. 5, 2012

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization NEW KENT COUNTY PUBLIC SCHOOLS

Contact Information (Print)

Name NATE COLLINS

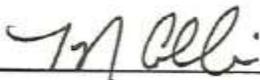
Title/Position EXECUTIVE DIRECTOR OF CURRICULUM AND INSTRUCTION

Address P.O. Box 110

NEW KENT, VA 23124

Telephone Number 804.966.9636

E-Mail ncollins@nkcps.k12.va.us

Signature 

Date 1-5-12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization Town of West Point

Contact Information (Print)

Name Shawn Hershberger

Title/Position Economic Development Coordinator

Address P.O. Box 152

West Point, VA 23181

Telephone Number (804) 843-2228 (904) 310-3900

E-Mail shershberger@west-point.va.us

Signature 

Date 1/10/12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization Charles City County

Contact Information (Print)

Name Delvin D. Robertson

Title/Position Director for Administrative Service

Address 10910 Courthouse Road  
Charles City, Va. 23030

Telephone Number

(804) 652-4649

E-Mail

mdrobertson@co.charles-city.va.us

Signature

Delvin D. Robertson

Date

January 5, 2012

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization King William County Schools

Contact Information (Print)

Name Gloria Washington

Title/Position Guidance Counselor/Coordinator

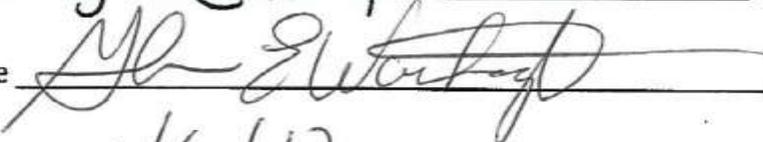
Address King William High School

P.O. Box 185

King William, VA 23009

Telephone Number \_\_\_\_\_

E-Mail gwashington@kwaps.k12.va.us

Signature 

Date 1/6/12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization New Kent HS

Contact Information (Print)

Name Katie Green

Title/Position Career Coach

Address 104 Druid Ct.

Williamsburg, VA 23185

Telephone Number (757) 784-2660

E-Mail Kgreen@rappahannock.edu

Signature K Green

Date 1/12/12

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization \_\_\_\_\_

#### Contact Information (Print)

Name Eric Hendrixson

Title/Position Director, Nuclear Engineering / DOMINION RESOURCE

Address 1022 HALEY DRIVE  
Mineral, VA 23117

Telephone Number (540) 894-2105

E-Mail Eric.Hendrixson@dom.com

Signature 

Date 2/18/12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization J. Sanders Construction Co.

Contact Information (Print)

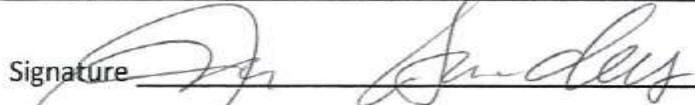
Name JOE SANDERS

Title/Position \_\_\_\_\_

Address 3240 KING WILLIAM AV.  
WEST POINT, VA. 23181

Telephone Number 804-843-4700

E-Mail JOE@JSANDERS

Signature 

Date 1-11-12

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization King & Queen Public Schools

Contact Information (Print)

Name Lorianne Smith,

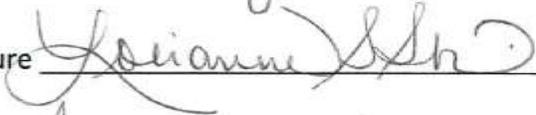
Title/Position Director Human Resources & Instruction

Address PO Box 97

King & Queen Courthouse, VA 23085

Telephone Number 804-785-5981

E-Mail lsmith@kgps.net

Signature 

Date Jan 5, 2011

# Bridging Communities Governor's STEM Academy

## Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization New Kent High School

Contact Information (Print)

Name Jennifer Smethurst

Title/Position School Counselor

Address 7365 Egypt Rd.  
New Kent, VA 23124

Telephone Number 804-966-9692

E-Mail j.smethurst@nkps.k12.va.us

Signature Jennifer Smethurst

Date 1/10/12

## Bridging Communities Governor's STEM Academy

### Partner Identification Form

I agree to be an active partner in planning and implementation of the proposed Bridging Communities Governor's STEM Academy.

Partner School

Division/Institution/Organization Rappahannock Comm. College

Contact Information (Print)

Name Donna Alexander, Ph. D.

Title/Position Vice President Academics / Student

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone Number (804) 758-6703

E-Mail dalexander@rappahannock.edu

Signature DA Alexander

Date 2/14/12

## APPENDIX THREE

# Bridging Communities Governor's STEM Academy Memorandum of Understanding

## **BRIDGING COMMUNITIES GOVERNOR'S STEM ACADEMY MEMORANDUM OF AGREEMENT**

Partners to this agreement support the objectives of the Bridging Communities Governor's STEM Academy to provide students a Pre-Engineering STEM Program and a Modeling and Simulation STEM program. This includes providing STEM application units in classes in each of the five participating school divisions, providing students a community service-learning experience, and operating programs in partnership with Rappahannock Community College.

The Bridging Communities Regional Career and Technical Center will serve Charles City, King William, King and Queen, Middlesex, and New Kent counties. The center will be the principal partner in the Bridging Communities Governor's STEM Academy. The Regional Technical Center will open the Pre-Engineering program and the Modeling and Simulation program meeting the requirements for a STEM program. All programs in the Regional Technical Center will be high-expectation programs with the two STEM-focused programs becoming the standard for all Regional Technical Center programs.

This Memorandum of Agreement will begin at the point the STEM Academy application is approved and will automatically renew in September of each year unless modified by mutual agreement or terminated by a partner. Any partner may withdraw before the annual September renewal date with written notice.

Partners agree to:

- a. Designate a key representative to serve in an advisory role in the implementation of the Governor's STEM Academy.
- b. Provide industry input on curriculum content and rigor and advice leading toward the goals of the Governor's STEM Academy.
- c. School division staff will assist in the process of obtaining community service-learning experiences for students in the Academy programs.
- d. Provide guidance in development of other community connections including field trips, classroom speakers, and summer employment.
- d. Assist with dual enrollment opportunity, industry certification, and STEM curriculum and activities.
- e. School division staff will assist the Bridging Communities staff in communicating with the five communities concerning the STEM Academy goals and purposes.
- f. New Kent County Public Schools will serve as Fiscal Agent.

Bridging Communities Regional Career and Technical Center agrees to:

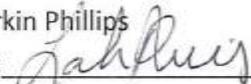
- a. Serve as the principal partner.
- b. Lead the Governor's STEM Academy planning team and advisory team.
- c. Facilitate program evaluation, data collection, and reporting.
- d. Assure adequate staff development, support, and credentialing for facility to meeting the programming needs and Virginia Department of Education requirements.

- e. Recruit, select, and enroll students using the Technical Center's established process assuring each school division is represented in each STEM program. Strategies will be implemented to recruit non-traditional and minority representation.
- f. Deliver instruction meeting industry demands and Governor's STEM Academy expectations.
- g. Work with school division counselors, career coaches, and instructional specialists to promote STEM education, career pathways, dual enrollment opportunity, and high-skill technical opportunity.

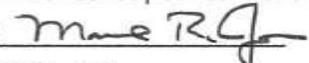
BRIDGING COMMUNITIES GOVERNOR'S STEM ACADEMY  
MEMORANDUM OF AGREEMENT  
PARTNER SIGNATURES

Certification of Agreement:

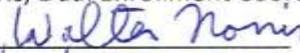
Bridging Communities Regional  
Career Technical Center

Name: Larkin Phillips  
Signature:   
Date: 2-14-2012

Bridging Communities Board of Control

Name: Dr. Mark Jones  
King William School Superintendent  
Signature:   
Date: 2-14-12

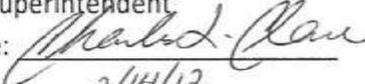
Rappahannock Community College  
Walter Norris, Dual Enrollment Coordinator

Signature:   
Date: 2/14/12

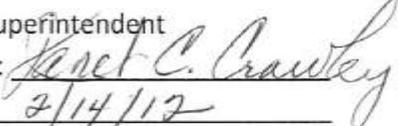
New Kent County Public Schools

Name: Dr. Robert Richardson  
Signature:   
Date: 2/14/12

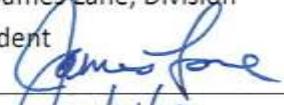
King and Queen County Public Schools

Name: Charles Clare, Division  
Superintendent  
Signature:   
Date: 2/14/12

Charles City County Public Schools

Name: Dr. Janet Crawley, Division  
Superintendent  
Signature:   
Date: 2/14/12

Middlesex County Public Schools

Name: Dr. James Lane, Division  
Superintendent  
Signature:   
Date: 2/14/12

## APPENDIX FOUR

Bridging Communities Governor's

STEM Academy

Statement of Assurances

**Governor's Science, Technology, Engineering and  
Mathematics (STEM) Academy**

**STATEMENT OF ASSURANCES**

The authorized signature on this page certifies to the Virginia Department of Education that the authorized official assures that:

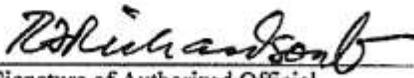
1. The planning committee has reviewed the provisions of *Administrative Procedures Guide for the Establishment of Governor's STEM Academies* outlined in the Guidance Manual, and understands that an implementation proposal will need to address these criteria and/or others approved by the Virginia Board of Education.
2. The planning committee agrees to follow the guidelines set forth in the *Administrative Procedures Guide for the Establishment of Governor's STEM Academy's* document.
3. If the Governor's STEM Academy will be a jointly operated program, an ongoing governing board will be established or maintained to reflect current Board of Education regulations relative to jointly operated schools and programs.
4. A public, government entity will serve as the grant fiscal agent.

Certification by Authorized or Institutional Official:

The applicant certifies that to the best of his/her knowledge the information in this application is correct, that the filing of this application is duly authorized by the partners participating in this process to establish a Governor's STEM Academy, and that the applicant will comply with the statements of assurances.

ROBERT F. RICHARDSON JR  
Typed or Printed Name of Authorized Official

SUPERINTENDENT  
Title

  
Signature of Authorized Official

5-1-12  
Date

**Governor's Science, Technology, Engineering and  
Mathematics (STEM) Academy**

**STATEMENT OF ASSURANCES**

The authorized signature on this page certifies to the Virginia Department of Education that the authorized official assures that:

1. The planning committee has reviewed the provisions of *Administrative Procedures Guide for the Establishment of Governor's STEM Academies* outlined in the Guidance Manual, and understands that an implementation proposal will need to address these criteria and/or others approved by the Virginia Board of Education.
2. The planning committee agrees to follow the guidelines set forth in the *Administrative Procedures Guide for the Establishment of Governor's STEM Academy's* document.
3. If the Governor's STEM Academy will be a jointly operated program, an ongoing governing board will be established or maintained to reflect current Board of Education regulations relative to jointly operated schools and programs.
4. A public, government entity will serve as the grant fiscal agent.

Certification by Authorized or Institutional Official:

The applicant certifies that to the best of his/her knowledge the information in this application is correct, that the filing of this application is duly authorized by the partners participating in this process to establish a Governor's STEM Academy, and that the applicant will comply with the statements of assurances.

Mark R. Jones  
Typed or Printed Name of Authorized Official

Superintendent KWAPS  
Title

  
Signature of Authorized Official

2-14-12  
Date

## APPENDIX FIVE

### Bridging Communities Governor's STEM Academy

### State of Operating Funds and Facilities Assurance

The Bridging Communities Governor's STEM Academy  
Bridging Communities Regional Career & Technical Center

STATE OF OPERATING FUNDS AND FACILITIES  
ASSURANCE

The authorized signature on this page certifies to the Virginia Department of Education that the authorized official assures that:

1. Operating funds and facilities are available to support the Governor's STEM Academy.
2. Materials and equipment will be provided to adequately support the needs of Bridging Communities Governor's STEM Academy.

Certification by Authorized or Institutional Official:

The applicant certifies that to the best of our knowledge, the information in this application is correct, that the filing of this application is authorized by the partners participating in the process to establish a Governor's STEM Academy, and that the applicant will comply with the above statement of assurances.

Mark R. Jones

Printed Name of Authorized Official

Superintendent

Title

Mark R. Jones

Signature of Authorized Official

4-3-12

Date

## APPENDIX SIX

### Bridging Communities Governor's STEM Academy Plans of Study



# Commonwealth of Virginia Plan of Study

Rev: 5/18/11

Student Name: \_\_\_\_\_  
School: Bridging Communities RCTC  
Date: \_\_\_\_\_

Cluster: **Science, Technology, Engineering & Mathematics**

Pathway: Engineering and Technology – Pre-Engineering

This Career Pathway Plan of Study can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.

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 <a href="http://www.cteresource.org/apg/">http://www.cteresource.org/apg/</a>	SAMPLE – Occupations Relating to This Pathway: <a href="http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml">http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml</a> <a href="http://www.careerclusters.org">http://www.careerclusters.org</a> <a href="http://www.cteresource.org/cpg/">http://www.cteresource.org/cpg/</a>	
<b>Graduation Requirements: <a href="http://www.doe.virginia.gov/instruction/graduation/index.shtml">http://www.doe.virginia.gov/instruction/graduation/index.shtml</a></b>									
<b>MIDDLE</b>	7	English 7 (1110)	Math 7 (3111)	Life Science 7 (4115)	US History (2354)		NOTE: Use state course titles Intro to Technology (8482)	<ul style="list-style-type: none"> <li>- Any Engineering option including Electrical, Environmental, Mechanical &amp; Chemical</li> <li>-Any Engineering Technology option including Chemical, Agricultural, Electronics, Mechanical &amp; Food</li> <li>- Electrical or Electronics drafter</li> <li>-Chemists</li> <li>- Geoscientists</li> </ul>	
	8	English 8 (1120)	Math 8 (3112)	Physical Science (4125)	Civics & Economics (2357)		Technological Systems (8463) or Inventions & Innovations (8464)		
<b>Career Assessment:</b> Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school: VA Wizard <input checked="" type="checkbox"/> or other assessment (please indicate): _____									
<b>SECONDARY</b>	9	English 9 (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography I (2215)	Economics & Personal Finance (6120) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE):	Technical Drawing & Design (8435)		
	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography II (2216)		Engineering Drawing & Design (8436)		
	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Engineering Explorations I (8450); Engineering Analysis & Applications II (8451); Engineering Practicum (8453)		
	12	English (1160)	Trigonometry/ Advanced Algebra (3137)	Physics (4510) or Principles of Technology I and II (9811/9812)	US/VA Government (2440)		Dual enrollment engineering courses at Rappahannock CC: EGR-120; EGR-135		
<b>High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)</b>									
<b>List related certifications/credentials approved by VDOE and offered locally:</b> <a href="http://www.cteresource.org/apg">http://www.cteresource.org/apg</a> (Go to Certification – License Section)  NOCTI – Pre-Engineering						<b>Additional Learning Opportunities:</b> CTSO Organization(s): <input type="checkbox"/> DECA <input type="checkbox"/> FBLA <input type="checkbox"/> FCCLA <input type="checkbox"/> FFA <input type="checkbox"/> FEA <input type="checkbox"/> HOSA <input type="checkbox"/> SkillsUSA <input checked="" type="checkbox"/> TSA  <b>Work-Based Learning:</b> <input checked="" type="checkbox"/> Career Research <input type="checkbox"/> Cooperative Education <input type="checkbox"/> Internship <input type="checkbox"/> Mentorship <input type="checkbox"/> Job Shadowing <input checked="" type="checkbox"/> Service Learning Project <input type="checkbox"/> Student Apprenticeship			
<b>Postsecondary:</b> Placement Assessments such as COMPASS & SAT II						College Entrance Exams such as ACT & SAT			
<b>POST-SECONDARY</b>	<b>SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY</b> Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)								
	<b>Pathway</b>	<b>Associate Degree, College Certificate, or Apprenticeship</b>			<b>Bachelors Degree</b>		<b>Postgraduate Degree</b>		
	Engineering	Electronics Technician Certificate							

College: [Rappahannock Community College](#)

School Division(s): [Bridging Communities Regional Career and Technical Center](#)

Postsecondary: Placement Assessments such as COMPASS & SAT II

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally	Semester	English	Mathematics	Science	Social Studies	Required Courses or Recommended Electives				
	<b>POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.</b>									
	Year 1 1st Semester	English 111	MTH 163 Precalculus I			SDV 100 College Success Skills	ETR 113 AC/DC Fundamentals I	ELE 20 Electrical Electronics Survey	ELE 127 Residential Wiring Methods	HLT/PED Elective
	Year 1 2nd Semester		MTH 164 Precalculus II				ETR 114 AC/DC Fundamentals II	ETR 203 Electronic Devices	ETR 271 Microsoft Electronics I	HLT/PED Elective
	Year 2 1st Semester				PHY 201 General College Physics	ECO 120 Survey of Economics	ETR 272 Microcomputer Electronics II	ELE 143 Programmable Controllers I	ELE 131 National Electrical Code	
Year 2 2nd Semester						ETR 204 Electronic Devices II	ELE 144 Programmable Controllers II	BUS 236 Communication in Management		
<b>College courses offered locally in the high school for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)</b>										
Related Industry Certifications Available:						<b>Additional Suggested Learning Opportunities:</b> <b>Work-Based Learning:</b> <input type="checkbox"/> Cooperative Education <input checked="" type="checkbox"/> Internship <input checked="" type="checkbox"/> Mentorship <input type="checkbox"/> Job Shadowing <input type="checkbox"/> Service Learning Project <input type="checkbox"/> Registered Apprenticeship				
<b>UNIVERSITY</b>	University/College: Degree or Major: Number of Articulated CC Credits:									
Notes:										



# Commonwealth of Virginia Plan of Study

Rev: 5/18/11

Student Name: \_\_\_\_\_  
 School: [Bridging Communities Regional Career and Technical Center](#)  
 Date: \_\_\_\_\_

**Cluster:** Health Science      **Pathway:** Therapeutic Services

*This Career Pathway Plan of Study can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.*

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 <a href="http://www.cteresource.org/apg/">http://www.cteresource.org/apg/</a>	SAMPLE – Occupations Relating to This Pathway: <a href="http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml">http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml</a> <a href="http://www.careerclusters.org">http://www.careerclusters.org</a> <a href="http://www.cteresource.org/cpg/">http://www.cteresource.org/cpg/</a>
------------------	-------	------------------------	-------------	---------	-------------------------	---	---	--

**Graduation Requirements:** <http://www.doe.virginia.gov/instruction/graduation/index.shtml>

<b>MIDDLE</b>	7	English 7 (1110)	Math 7 (3111)	Life Science 7 (4115)	US History (2354)		NOTE: Use state course titles	<ul style="list-style-type: none"> <li>- Nurse Aide</li> <li>- Dietician</li> <li>- Athletic Trainer</li> <li>- LPN Nurse</li> <li>- Registered Nurse</li> <li>- Health Insurance</li> <li>- Many specialty nurse related occupations are available with training</li> <li>- Doctor</li> <li>- Educator</li> <li>- Medical Research</li> </ul>
	8	English 8 (1120)	Math 8 (3112)	Physical Science (4125)	Civics & Economics (2357)		Keyboarding Middle (6150)	

**Career Assessment:** Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school:  
 VA Wizard  or other assessment (please indicate): \_\_\_\_\_

<b>SECONDARY</b>	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography I (2215)	Economics & Personal Finance (6120) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE):	Medical Terminology (8383)	<ul style="list-style-type: none"> <li>- Nurse Aide (8360) DE NUR 27, DE NUR 29 DE NUR 120, DE NUR 135 DE PNE 155, DE PNE 173</li> </ul>
	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography II (2216)		Human Body Systems (8380) or Computer Information Systems (6612)	
	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Computer Information Systems Advanced (6613)	
	12	English (1160)	Trigonometry/ Advanced Algebra (3137)	Physics (4510)	US/VA Government (2440)			

**High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)**

**List related certifications/credentials approved by VDOE and offered locally:**  
<http://www.cteresource.org/apg> (Go to Certification – License Section)

Nurse Aide Licensure Exam

**Additional Learning Opportunities:**

CTSO Organization(s):  DECA     FBLA     FCCLA     FFA  
 FEA     HOSA     SkillsUSA     TSA

**Work-Based Learning:**

Career Research     Cooperative Education     Internship     Mentorship  
 Job Shadowing     Service Learning Project     Student Apprenticeship

**Postsecondary:** Placement Assessments such as COMPASS & SAT II

College Entrance Exams such as ACT & SAT

<b>POSTSECONDARY</b>	<b>SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY</b>			
	Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)			
	Pathway	Associate Degree, College Certificate, or Apprenticeship	Bachelors Degree	Postgraduate Degree
	Practical Nursing	Certificate		

College: [Rappahannock Community College](#)

School Division(s): [Bridging Communities Regional Career and Technical Center](#)

Postsecondary: Placement Assessments such as COMPASS & SAT II

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally	Semester	English	Mathematics	Science	Social Studies	Required Courses or Recommended Electives				
	<b>POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.</b>									
	Year 1 1st Semester	SDV 100 College Success Skills				SOC 200 Principles of Sociology I			PNE 161 Nursing in Health Changes I	
	Year 1 2nd Semester	ENG 111 College Composition I			PSY 230 Development Psychology			PNE 162 Nursing in Health Changes II		
	Year 2 1st Semester						HLT 230 Principles of Nutrition and Human Develop.	PNE 145 Trends in Practical Nursing	PNE 163 Nursing in Health Changes III	
Year 2 2nd Semester										
<b>College courses offered locally in the high school for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)</b>										

<p><b>Related Industry Certifications Available:</b></p> <p>Practical Nurse licensure Exam</p>	<p><b>Additional Suggested Learning Opportunities:</b></p> <p><b>Work-Based Learning:</b></p> <p> <input type="checkbox"/> Cooperative Education                    <input type="checkbox"/> Internship                    <input checked="" type="checkbox"/> Mentorship  <input type="checkbox"/> Job Shadowing                    <input type="checkbox"/> Service Learning Project                    <input type="checkbox"/> Registered Apprenticeship             </p>
--	---

<b>UNIVERSITY</b>	<p>University/College:</p> <p>Degree or Major:</p> <p>Number of Articulated CC Credits:</p>
-------------------	---

**Notes:** Students have the opportunity to complete four of the nursing classes listed above in addition to the Nurse Aide Program at Bridging Communities Regional Career & Technical Center.



# Commonwealth of Virginia Plan of Study

Rev: 5/18/11

Student Name: \_\_\_\_\_  
School: Bridging Communities RCTC  
Date: \_\_\_\_\_

**Cluster: Science, Technology, Engineering & Mathematics**

**Pathway: Engineering and Technology – Modeling and Simulation**

*This Career Pathway Plan of Study can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.*

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses <small>Source: Administrative Planning Guide <a href="http://www.cteresource.org/apg/">http://www.cteresource.org/apg/</a></small>	SAMPLE – Occupations Relating to This Pathway: <small><a href="http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml">http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml</a> <a href="http://www.careerclusters.org">http://www.careerclusters.org</a> <a href="http://www.cteresource.org/cpg/">http://www.cteresource.org/cpg/</a></small>	
<b>Graduation Requirements: <a href="http://www.doe.virginia.gov/instruction/graduation/index.shtml">http://www.doe.virginia.gov/instruction/graduation/index.shtml</a></b>									
<b>MIDDLE</b>	7	English 7 (1110)	Math 7 (3111)	Life Science 7 (4115)	US History (2354)		<b>NOTE: Use state course titles</b> Intro to Technology (8482)	CAD Technician Survey Technician Project Design Chemical Material Specialist Healthcare Specialist Transportation Design Education Training Medical Training Corporate Training Military Simulation and Training Grounds and Maintenance Specialist	
	8	English 8 (1120)	Math 8 (3112)	Physical Science (4125)	Civics & Economics (2357)		Technological Systems (8463) or Inventions & Innovations (8464)		
<b>Career Assessment:</b> Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school: VA Wizard <input checked="" type="checkbox"/> or other assessment (please indicate): _____									
<b>SECONDARY</b>	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography I (2215)	Economics & Personal Finance (6120) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE):	Technical Drawing & Design (8435)		
	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography II (2216)		Engineering Drawing & Design (8436)		
	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Design/Multimedia/Web Technologies (6630), Design/Multimedia/Web Technologies (6631) Digital Input Technologies (6161)		
	12	English (1160)	Trigonometry/ Advanced Algebra (3137)	Physics (4510) or Principles of Technology I and II (8711.8712)	US/VA Government (2440)		Communications Systems (8415); Digital Visualization (8459); Modeling and Simulation (8460)		
<b>High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)</b>									
<b>List related certifications/credentials approved by VDOE and offered locally:</b> <a href="http://www.cteresource.org/apg">http://www.cteresource.org/apg</a> (Go to Certification – License Section)  Brainbench: 3-D Simulation					<b>Additional Learning Opportunities:</b> CTSO Organization(s): <input type="checkbox"/> DECA <input checked="" type="checkbox"/> FBLA <input type="checkbox"/> FCCLA <input type="checkbox"/> FFA <input type="checkbox"/> FEA <input type="checkbox"/> HOSA <input type="checkbox"/> SkillsUSA <input checked="" type="checkbox"/> TSA  <b>Work-Based Learning:</b> <input checked="" type="checkbox"/> Career Research <input type="checkbox"/> Cooperative Education <input type="checkbox"/> Internship <input type="checkbox"/> Mentorship <input type="checkbox"/> Job Shadowing <input checked="" type="checkbox"/> Service Learning Project <input type="checkbox"/> Student Apprenticeship				
<b>Postsecondary:</b> Placement Assessments such as COMPASS & SAT II					College Entrance Exams such as ACT & SAT				
<b>POST-SECONDARY</b>	<b>SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY</b> Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)								
		<b>Pathway</b>	<b>Associate Degree, College Certificate, or Apprenticeship</b>	<b>Bachelors Degree</b>	<b>Postgraduate Degree</b>				
	Engineering	Web Design And Modeling Certificate							

College: [Rappahannock Community College](#)

School Division(s): [Bridging Communities Regional Career and Technical Center](#)

Postsecondary: Placement Assessments such as COMPASS & SAT II

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally	Semester	English	Mathematics	Science	Social Studies	Required Courses or Recommended Electives				
	<b>POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.</b>									
	Year 1 1st Semester	English 111				SDV 100 College Success Skills	ITE 130 Introduction to Internet Services	CAD 238 Computer Aided Modeling and Rendering I		
	Year 1 2nd Semester						ITD 110 Web Page Design I	CAD 239 Computer Aided Modeling and Rendering II	ITD 112 Designing Web Page Graphics	
	Year 2 1st Semester					Social Science Elective	CAD 250 3D Game Level Design	ITD 210 Web Page Design II		
Year 2 2nd Semester						ITD 212 Interactive Web Design	ITD 298 Projects			

College courses offered locally in the high school for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)

Related Industry Certifications Available:

Additional Suggested Learning Opportunities:

**Work-Based Learning:**

- Cooperative Education   
  Internship   
  Mentorship  
 Job Shadowing   
  Service Learning Project   
  Registered Apprenticeship

UNIVERSITY

University/College:  
 Degree or Major:  
 Number of Articulated CC Credits:

Notes: