

# Board of Education Agenda Item

Item: F.

Date: July 28, 2011

**Topic:** Final Review of a Proposal to Establish a Governor's Science, Technology, Engineering and Mathematics (STEM) Academy: Blue Ridge Crossroads Governor's Academy for Technical Education

**Presenter:** Ms. Lolita Hall, Director, Office of Career and Technical Education Services

**Telephone Number:** 804-225-2847

**E-Mail Address:** lb.hall@doe.virginia.gov

## Origin:

Topic presented for information only (no board action required)

Board review required by

State or federal law or regulation

Board of Education regulation

Other: Process for Initiating a Governor's Career and Technical STEM Academy Approved by the Board of Education on November 29, 2007

Action requested at this meeting  Action requested at future meeting: \_\_\_\_\_ (date)

## Previous Review/Action:

No previous board review/action

Previous review/action

date June 23, 2011

action Accepted for first review

## Background Information:

Virginia is one of six states to receive a grant from the National Governors Association (NGA) Center for Best Practices to improve science, technology, engineering, and mathematics (STEM) education. The development of Governor's STEM Academies is one of the major initiatives of the grant.

Virginia's Governor's STEM Academies are programs designed to expand options 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.

Currently there are nine 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, and Suffolk City.

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 contained in Attachment A. Attachments B and C contain the reports from the reviews by SCHEV and the DOE. Attachment D contains the complete proposal.

### **Summary of Major Elements**

The Blue Ridge Crossroads Governor's Academy for Technical Education (BRCGATE) is conceptualized from a planning partnership that consists of Carroll County Public Schools, Galax City Public Schools, Grayson County Public Schools, the Crossroads Institute, Wytheville Community College, Virginia Tech, Virginia Cooperative Extension Agency, New River/Mt. Rogers Workforce Investment Board, Chestnut Creek School of the Arts, and the following businesses: Red Hill General Store, The Turman Group, Lowe's Home Improvement, and future partners: Radford University, Medfit Systems, Professional Networks, Guardian, and MOOG Industries.

This partnership represents the educational and economic interests of the region with consideration for possible future expansion to Wythe, Bland, Patrick, and Pulaski counties.

The proposed academy targets three pathways in three career clusters. The first pathway, Engineering and Technology in the Stem Cluster, will be new to the course offerings at each of the participating secondary schools. Students enrolled in the pathway will be actively involved with high-tech devices, engineering graphics, mathematical concepts, and scientific principles through engineering-design experiences. Students enrolled in this pathway will be introduced to the career choices in the engineering and technology areas and prepare for postsecondary education in one of the engineering and technology fields.

The second pathway, Construction, is in the Architecture and Construction Career Cluster. The pathway will build upon current dual enrollment career and technical program areas within the Architecture and Construction Cluster with a focus on Green career awareness and training.

The third pathway will focus on the Food Production and Processing Systems from the Agriculture, Food, and Natural Resources (AFNR) Cluster. Carroll County Public Schools (CCPS) will make its Agriculture Research Farm available to other partners in the Academy to conduct independent research and replicate projects already underway at the facility.

### **Superintendent's Recommendation:**

The Superintendent of Public Instruction recommends that the Board of Education approve the proposal to establish the Blue Ridge Crossroads Governor's Academy for Technical Education beginning in the fall of 2011.

### **Impact on Resources:**

Funding must be provided at the local level.

### **Timetable for Further Review/Action:**

The proposed beginning date for the Blue Ridge Crossroads Governor's Academy for Technical Education is fall of 2011.

**The Blue Ridge Crossroads Governor's Academy for  
Technical Education**  
Executive Summary  
June 1, 2011

**Partnership Members:** Carroll County Public Schools; Galax City Public Schools; Grayson County Public Schools, the Crossroads Institute; Wytheville Community College; Virginia Tech; Virginia Cooperative Extension Agency; New River/Mount Rogers Workforce Investment Board; Chestnut Creek School of the Arts; and the following businesses: Red Hill General Store; The Turman Group; Lowe's Home Improvement; and future partners: Radford University; Medfit Systems; Professional Networks; Guardian; and MOOG Industries.

**Lead Entity:** Carroll County Public Schools

**Fiscal Agent:** Carroll County Public Schools

**Contact Person:** Dr. Mark A. Burnette  
Director of Middle and Secondary Education  
Carroll County Public Schools  
605-9 Pine Street  
Hillsville, Virginia 24343  
Phone: 276-730-3214  
E-mail: [maburnet@ccpsd.k12.va.us](mailto:maburnet@ccpsd.k12.va.us)

**Academy Location:** Carroll County Public Schools  
605-9 Pine Street  
Hillsville, Virginia 24343

**Number Students:** The Academy will serve 100 students in 2011-12 and 300 students in 2012-13.

**Career Pathways:** The proposed academy targets three pathways in three career clusters. The first pathway, Engineering and Technology in the Stem Cluster, will be new to the course offerings at each of the participating secondary schools. Students enrolled in the pathway will be actively involved with high-tech devices, engineering graphics, mathematical concepts, and scientific principles through engineering-design experiences. Students enrolled in this pathway will be introduced to the career choices in the engineering and technology areas and prepare for postsecondary education in one of the engineering and technology fields.

The second pathway, Construction, is in the Architecture and Construction Career Cluster. The pathway will build upon current dual enrollment career and

technical program areas within the Architecture and Construction Cluster with a focus on Green career awareness and training.

The third pathway will focus on the Food Production and Processing Systems from the Agriculture, Food, and Natural Resources (AFNR) Cluster. Carroll County Public Schools (CCPS) will make its Agriculture Research Farm available to other partners in the Academy to conduct independent research and replicate projects already underway at the facility.

**Academy Goals and Description:** This partnership recognizes the need both statewide, and particularly at the regional level, for options that will enable the general population of students to acquire science, technology, engineering, and mathematics (STEM) literacy and other critical knowledge, skills, and credentials that will prepare them for high-demand, high-wage, and high-skill careers. The BRCGATE partnership will help students develop advanced level technical and academic skills that will not only provide students an advantage in the current work force but provide them the foundational skills necessary to meet the expectations of the future global work force.

Finally, the BRCGATE will address the need for a highly skilled work force that will assist the region in attracting high-tech industries to a rural, economically challenged area of the state.

### **Highlights of the Program**

In cooperation with Wytheville Community College, an Associate's Degree program has been implemented in the BRCGATE service region high schools. High school students can enroll in this program as early as their sophomore year and can obtain an Associate in Science Degree concurrently with a high school diploma through enrollment in dual credit courses and attending summer sessions at WCC. The BRCGATE would be able to expand pathway options that would include a Pre-Engineering Program for students in the service region.

Each student in the Academy will have an individualized high school plan that is initially developed during the second semester of their seventh-grade year consistent with the requirements of the Virginia Department of Education. Each student's individualized plan of study will meet the graduation requirements of both the Technical and Advanced Technical Diploma.

Consistent with the Commonwealth Scholars Program (CCPS is one of the eleven original partners identified throughout the state.), the BRCGATE program will build upon the current core curriculum offered by partner public school systems with a focus on higher-level mathematics, higher-level science, and foreign language. The Academy will also build from established CTE Tech Prep pathways, such as the dual credit components in information technology, computer networking, electronics, pre-construction and construction.

The school systems will be assisted in this effort through course offerings from Wytheville Community College and the Virginia Community College System (VCCS) and through assistance provided by Virginia Tech and other partners in the agreement. In addition to providing facilities to house the Academy, the Crossroads Institute will provide relevant entrepreneurial learning opportunities. With implementation of this Academy, students will benefit from increased academic rigor and new course offerings as a result of this collaboration.

In accordance with the existing CTE programs in the service region and the state-developed competencies of each program, Virginia's Workplace Readiness Skills will be incorporated into each pathway represented in the Academy. The BRCGATE's partnership with the New River/Mt. Rogers Workforce Investment Board will ensure that workplace readiness skills are a major component of the curriculum. Students will obtain relevant learning opportunities through internships with STEM-related industries.

Entrepreneurial training and the cultivation of relationships with college faculty and industry representatives will play important roles in the Academy's network of support and guidance to assist students toward achieving their college and career goals.

The State Council of Higher Education for  
Virginia

Review of Governor's Career and Technical  
Academy Proposal

Name of Lead Entity on Proposal: Carroll County Public Schools

Date of Review: June 15, 2011

The State Council of Higher Education for Virginia recommends  
approval of Blue Ridge Crossroads Governor's Academy for  
Technical Education, as a Governor's Career and Technical  
Academy.



Peter Blake, Interim Executive Director  
State Council of Higher Education for Virginia

  
Date

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

**Final Review**

**Title of Proposal: Blue Ridge Crossroads Governor's  
Academy for Technical Education**

**Lead Entity for Proposal: Carroll County Public  
Schools**

**Date of Review: June 23, 2011**

## Governor's Career and Technical Academy Proposal Review Checklist

### I. Partnership Capacity

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

Criteria	Documentation			Comments
	Full	Partial	None	
A. An active, ongoing planning committee, including a list of members and signed certifications from each that they are willing and able to serve in that capacity. At a minimum, members must represent K-12 education (superintendent or designee), higher education, and business and industry. All partners must be represented on the committee.	X			
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 Career and Technical Academy to broaden the scope of students' educational experiences.	X			

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

Criteria	Documentation			Comments
	Full	Partial	None	
A. Demonstration of the need/rationale for the Academy. This statement should be concise and state the major reasons to have a Governor’s Career and Technical Academy, including need at the state, local and/or regional levels.	X			
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			

Criteria	Documentation			Comments
	Full	Partial	None	
C. A fiscal agent that is a public entity, including a certification that the entity is willing and able to serve in that capacity.	X			
Comments:				

### III. Program Description

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

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

Criteria	Documentation			Comments
	Full	Partial	None	
1. Rigorous academic content in career and technical instruction;	X			
2. An emphasis on STEM career pathways;	X			
3. Individualized high school plans to ensure course selections that are aligned with students’ transition and career goals after high school;	X			
4. Evidence that graduates will complete a college and work readiness curriculum, minimally at the level specified for Commonwealth Scholars Course of Study (State Scholars Core) with the possibility of pre-approved substitution of equivalent courses where there may be more relevant course selections for a particular career pathway;	X			

Criteria	Documentation			Comments
	Full	Partial	None	
5. Evidence that graduates will qualify for the Technical and/or the Advanced Technical Diplomas; and	X			
6. Incorporation of Virginia's Workplace Readiness Skills.	X			
Comments:				

**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			

Criteria	Documentation			Comments
	Full	Partial	None	
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>	X			
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-	X			

Criteria	Documentation			Comments
	Full	Partial	None	
wage, high-skill field as identified by employers and work force officials.				
d. At least one pathway must be in a STEM-related field. This career pathway should drive the innovative capacity of the region and/or state.	X			
Comments:				

Criteria	Documentation			Comments
	Full	Partial	None	
<b>Pathway #2</b>	X			
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			

Criteria	Documentation			Comments
	Full	Partial	None	
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 innovative capacity of the region and/or the state.	X			
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><u>or</u></b>	X			
b. Earn at least 9 transferable college credits as defined in the Early College Scholars program (includes dual enrollment, AP and other options); <b><u>or</u></b>	X			
c. Earn an Associate Degree.	X			
Comments:				

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

Criteria	Documentation			Comments
	Full	Partial	None	
a. Cooperative Education; or	X			
b. Internships; or	X			
c. Job Shadowing; or	X			
d. Mentorships; or	X			
e. Project-based learning; or	X			
f. Service learning; or	X			
g. A combination of the above.	X			
Comments:				

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

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

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

**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			
3. Consideration of feedback from students, staff, parents, the community, and partnership members; and	X			
4. Annual collection and reporting of data to the Department of Education related to student achievement, goal achievement, and other indicators.	X			
Comments:				

**IV. Administrative Procedures**

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

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

**B. Student recruitment, selection criteria, and admissions.**

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

**C. Code of student conduct and attendance.**

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

**H. Parent, student and community involvement**

Criteria	Documentation			Comments
	Full	Partial	None	
1. Preparation for entering the Academies should begin by eighth grade.	X			
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			
Budget (from appendix)	X			
Budget Narrative	X			
Other	X			
Comments:				



**Blue Ridge Crossroads Governor's  
Academy  
For Technical Education  
Carroll County Public Schools**

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## **Blue Ridge Crossroads Governor's Academy for Technical Education Proposal Narrative**

### **Overview**

The Blue Ridge Crossroads Governor's Academy for Technical Education (BRCGATE) is conceptualized from a planning partnership that consists of Carroll County Public Schools, Galax City Public Schools, Grayson County Public Schools, the Crossroads Institute, Wytheville Community College, Virginia Tech, Virginia Cooperative Extension Agency, New River/Mt. Rogers Workforce Investment Board, Chestnut Creek School of the Arts, and the following businesses: Red Hill General Store, The Turman Group, Lowes Home Improvement, and future partners: Radford University, Medfit Systems, Professional Networks, Guardian, and MOOG Industries.

This partnership represents the educational and economic interests of the region with consideration for possible future expansion to Wythe, Bland, Patrick, and Pulaski counties.

### **Part I – Partnership Capacity**

#### **A. Planning Committee**

The BRCGATE has an active, ongoing planning committee consisting of representatives of K-12 education, higher education, governmental and non-profit organizations as well as business and industry. Appendices A and B contain the agenda, sample letter of invitation, and representatives of potential partners present at the organization and planning meeting held on June 18, 2010. Appendix C contains the presentation on the Future of STEM Education in the Twin Counties. Appendix D

contains the Partner Identification List, and Appendix E contains the signed Partnership Identification Forms.

### **B. Advisory Committee and C. MOA.**

The BRCGATE has an advisory committee with a list of members and signed Memorandums of Agreement (MOA) indicating their willingness to serve in that capacity. The MOA outline ways in which the partners can assist in providing resources that will contribute to the BRCGATE to broaden the scope of students' educational experiences. The Advisory Committee list, signed Memorandums of Agreement, and Statement of Assurances are contained in appendices F, G, and H, respectively.

## **Part II – Need/Rationale**

### **A. Need/Rationale**

This partnership recognizes the need both statewide, and particularly at the regional level, for options that will enable the general population of students to acquire science, technology, engineering, and mathematics (STEM) literacy and other critical knowledge, skills, and credentials that will prepare them for high-demand, high-wage, and high-skill careers. This partnership also recognizes the need to challenge current belief structures about career and technical education. A major focus of this partnership is to refute prior conceptions that career and technical education is no more than traditional vocational education with a focus on low-skill, low-wage jobs. The BRCGATE partnership will help students develop advanced level technical and academic skills that will not only provide them an advantage in the current work force but provide them the foundational skills necessary to meet the expectations of the future global work force.

Consistent with *The NGA Center For Best Practices, Science, Technology, Engineering and Math Center Grant Program, Gap Analysis of Virginia's Policy Landscape*, the partnership is keenly aware of the gaps between work force demand and supply in career and technical fields with a STEM education focus. For example, statewide indicators reveal a 5.4 percent increase in the demand for Network Systems and Data Communications Analysts and a 1.8 percent increase in the demand for Construction Laborers from 2008 to 2018. <http://www.vawc.virginia.gov> (See Labor Market Information in this section). Although these programs are typically unrelated as far as training, they both indicate job growth potential for our region. Work force shortages in these fields hamper the area in attracting and retaining traditional and new economy businesses. Also consistent with the gap analysis, the partnership realizes the need for innovation output through "Green" career training and entrepreneurship. Thus, mirroring Virginia's proposal (*Gap Analysis of Virginia's Policy Landscape*), the BRCGATE proposal sets forth the Academy's aim to develop model programs in career and technical education that raise program quality and show improved alignment with postsecondary expectations in education and the workplace. These programs will expand options for all students to acquire the knowledge and skills needed for multiple postsecondary pathways, especially for training toward high-wage, high-skill occupations in growing industries. The BRCGATE will address immediate regional skill gaps and longer-term STEM-related strategic skill gaps identified by the state. The Academy will be built on a foundation of high standards, recognition, acceleration options, and industry and higher education partnerships.

Finally, the BRCGATE will address the need for a highly skilled work force that will assist the region in attracting high-tech industries to a rural, economically challenged area of the state. With an average unemployment rate of 10.1 percent for the Twin County region (Carroll, Grayson, Galax) as compared to the average state unemployment rate of 6.4 percent (Virginia Employment Commission, December 2010, see Table A below), the service region desperately needs a stimulus for both employment and economic growth. With the decline of operator, assembly, and unskilled labor opportunities in the manufacturing industry in the region (Virginia Employment Commission, December 2010, see Table B on the next page) as well as in the state and nation, it becomes imperative that local public K-12 school divisions, institutes of higher education, local governments, non-profit organizations, and representatives of business and industry work collaboratively to provide training in skilled trade, technical, engineering, and professional related occupations. The mission of the BRCGATE will be to provide this crucial training locally to the future workforce of the region.

**Table A**  
**Area Labor Force, Employment and Unemployment Data**

The table below shows estimated labor force, employment, and unemployment information in Carroll County, Virginia Statewide, and national for December 2010. These figures are not seasonally adjusted.

Area Name	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate	Preliminary Data
<a href="#"><u>Carroll County</u></a>	13,552	12,183	1,369	10.1%	No
<a href="#"><u>Virginia Statewide</u></a>	4,157,362	3,890,714	266,648	6.4%	No
<a href="#"><u>United States</u></a>	153,156,000	139,159,000	13,997,000	9.1%	No

Source: Labor Market Statistics, Local Area Unemployment Statistics Program

**Table B**  
**Industry Employment & Projections data in New River/Mt. Rogers (LWIA II) from Base Year 2008 to Projected Year 2018.**

Industry Code	Industry Title	2008 Estimated Employment	2018 Projected Employment	Total 2008-2018 Employment Change	Annual Avg. Percent Change	Total Percent Change
310000	Manufacturing	28,241	25,988	-2,253	-0.83	-8.0

*Source: Projections Team and Bureau of Labor Statistics*

### **B. Enhanced or Additional Course Offerings**

The proposed Academy targets three pathways in three career clusters. The first pathway, Engineering and Technology, is within the STEM Cluster. The Engineering and Technology pathway will be new to the course offerings at each of the participating secondary schools. Students enrolled in the pathway will be actively involved with high-tech devices, engineering graphics, mathematical concepts, and scientific principles through engineering-design experiences. Students enrolled in this pathway will be introduced to the career choices in the engineering and technology areas and prepare for postsecondary education in one of the engineering and technology fields.

Contained within this cluster is an existing electronics technology program with a new focus on robotics and nanotechnology. This program focuses on regional skill gaps. This pathway and the cluster in which it is contained correspond to those occupations classified as growth occupations by the Virginia Employment Commission in its profile of the New River/Mount Rogers Workforce Investment Area

(<http://www.alex.vec.virginia.gov/lmi/pdfs/communityprofiles/5115000442.pdf> page 29).

In addition to the traditional focus of teaching students to assemble, install, operate, maintain, repair, and troubleshoot electrical/electronic equipment used in industry and manufacturing, the electronics technology program will introduce students to the

concepts of robotics and nanotechnology currently utilized in today's production and manufacturing industry.

Other STEM-related pathways within the Information Technology Cluster will include the following:

- Network Systems and
- Programming and Software Development.

These pathways correspond to occupations identified by the Virginia Employment Commission with the largest projected percent increase in Virginia employment from 2002 to 2012. (<http://www.alex.vec.virginia.gov/lmi/pdfs/communityprofiles/5101000000.pdf>, page 29) The pathways also correspond to those occupations for which the work force-driven demand for graduates from specific education and training programs exceeds the likely supply of graduates by the largest numbers, as identified in the *Workforce Development Blueprint, Defining Virginia Workforce Needs 2012*, by the Virginia Workforce Council (2006), (<http://www.vccs.edu/Portals/0/ContentAreas/Workforce/vwc/workforcedevblueprintrpt.pdf>, pages 113-115).

- The Network Systems pathway will prepare students in the Network Design process. The renewed program will provide students enrolled with the skills needed to become network technicians, computer technicians, cable installers, or help-desk technicians as well as prepare them to complete the CISCO Industry certification exam.
- The existing Programming and Software Development pathway provides students instruction in database development, modeling, design, and

normalization. In addition, students are introduced to database programming. Students gain the skills and knowledge needed to use features of database software and programming to manage and control access to data. Students successfully completing the program and passing the industry certification exam will become Oracle certified as well as receive 12 dual credits.

The second pathway, Construction, is in the Architecture and Construction Career Cluster. The pathway will build upon current dual enrollment career and technical program areas within the Architecture and Construction Cluster with a focus on Green career awareness and training. The enhanced program area will provide new competencies for training specifically in “Green” occupations within the Architecture and Construction Career Cluster. According to Cassio in the [Green Career Resource Guide](http://www.greencapitalalliance.org/docs/GreenCareersResourceGuide(Fall09).pdf) ([http://www.greencapitalalliance.org/docs/GreenCareersResourceGuide\(Fall09\).pdf](http://www.greencapitalalliance.org/docs/GreenCareersResourceGuide(Fall09).pdf), page 62 “...nearly 60 billion dollars of the American Recovery and Reinvestment Act of 2009 was strategically targeted to stimulate growth of certain Green industries and technologies with the intention of creating many new Green jobs.”

The Construction Pathway (Building Trades program area at Carroll County and Grayson County High Schools) is a dual enrollment Tech Prep program through Wytheville Community College currently offering students an opportunity to earn 15 dual credit hours. As a recipient of the ARRA funds, Wytheville Community College and New River/Mt. Rogers Workforce Investment Board, two proposed partners in the BRCGATE, have recently developed Green and alternative energy courses at the postsecondary level. The Construction, Retrofitting and Energy-efficiency Assessment Training and Employment System (CREATES) program provides students the

opportunity for postsecondary classes and industry certification in the “Green” career field while pursuing a diploma in Construction Technology.

- The Design/Pre-Construction program is represented by Carroll County High School’s Drafting program, a dual enrollment Tech Prep program with Wytheville Community College.
- The Drafting software program also has the capacity to interface with a Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) program utilized in the Agricultural Education programs.

The third pathway will focus on the Food Production and Processing Systems from the Agriculture, Food, and Natural Resources (AFNR) Cluster. Carroll County Public Schools (CCPS) will make its Agriculture Research Farm available to other partners in the Academy to conduct independent research and replicate projects already underway at the facility. The CCPS Agriculture Research Farm presently provides students the opportunity to experience hands-on learning activities through a stream mitigation project; field trial variety test plots of crops including tomatoes, corn, pumpkins, and sugar cane, alternative fuel crops such as canola and barley; and a cattle grazing study all conducted in collaboration with the Department of Agricultural and Extension Education at Virginia Tech. This program will emphasize the sustainability of the farm-based economy of the region and the training of students in the latest agricultural trends and techniques. Dual credit opportunities currently exist within the horticulture program, and the addition of newly developed dual credit programs in Biotechnology in Agriculture will allow students to conduct meaningful research in a

laboratory setting. Partnerships with the College of Agriculture and Life Sciences at Virginia Tech will allow students to pursue higher education opportunities.

The academy will provide experiences for students in additional pathways in the AFNR cluster: the Power, Structural, and Technology Systems and the Environmental and Natural Resources Systems. The fabrication and wood technologies program at the Academy will utilize computer-aided manufacturing and design technologies as well as traditional fabrication technology to train students for both entry level and higher skilled positions in industry. Collaboration between the CAD/CAM classes and the Agriculture Fabrication and Emerging Technologies classes will provide students the opportunity to experience the entire manufacturing process from design to production. The traditional focus of the region's economy has been the furniture and woodworking industry that utilized many unskilled laborers. To remain competitive in this industry the future work force will be required to be well trained in problem-solving and computer-based manufacturing skills that will make them more marketable in a workplace that is specialized and less unskilled labor intensive. Newly purchased Computer Numerical Control machinery will be utilized to provide instruction in the production process. Partnerships with the College of Natural Resources and Environment, specifically the Wood Science and Forest Products Department, at Virginia Tech will provide students the additional opportunity to pursue higher education in a field of study that would include forest products business and wood materials science.

The proposed academy is unique with its focus on entrepreneurial skills within each of the identified pathways. This entrepreneurship integration builds upon this area's designation, by the 2004 Virginia General Assembly through House Joint Resolution

Number 132, as the Entrepreneurial Education Region of Virginia. The Resolution states that “...entrepreneurial education is recognized as a valid form of economic development, capturing the energy, imagination, and passion of the citizens of [the region].” The Resolution also recognizes that 80 percent of new jobs being created are in the area of small business and entrepreneurship. “The noteworthy efforts of the . . . localities and the visionary leadership of the citizens of the region to achieve regional cooperation and the promotion of community, economic, and educational development....” are recognized by the Resolution. Data from the United States Department of Labor indicate there were an estimated 567,830 small businesses in Virginia in 2004. Of the 172,785 firms with employees, an estimated 97.8 percent, or 169,053, were small firms with less than 500 employees. (Sources: U.S. Dept. of Labor, Bureau of Labor Statistics; U.S. Dept. of Commerce, Census Bureau) This region has chosen to emphasize entrepreneurship as a primary focus in its economic development. Thus, by combining preparation in STEM literacy with entrepreneurial skills, not only will students be prepared to work in high-demand, high-wage, and high-skill new jobs, but they will also have the knowledge necessary to create these new jobs by establishing their own small businesses. Table C on the next page details the new STEM-related courses that will be implemented through the BRCGATE.

**Table C – New and Existing Courses for BRCGATE**

<b>New Courses</b>	<b>Existing Courses</b>
Algebra, Functions, and Data Analysis	Biology 101 & 102
Dual Credit Physics 101 & 102	Agriculture Power Systems, Agricultural Fabrication and Emerging Technologies
Dual Credit Chemistry 111 & 112	Building Trades BLD 105, 110, 111, 112, & 195, ELE 110 & 115 Dual Credit
Dual Credit Statistics MTH 241 & 242	Electronics Technology ETR 113,114,156 & 160 Dual Credit
Biological Applications in Agriculture	Drafting/Engineering Graphics DRF 151 & 152 Dual Credit
Biotechnology Foundations	Computer Systems Technology ITN 107 & 200 Dual Credit
Biotechnology Applications in Agriculture	Database Design and Management (Oracle) ITD 110, 225, 250 & 256 Dual Credit
Introduction to Engineering EGR 120	Computer Networking Hardware Operations (CISCO) ITN 154, 155,156, & 157 Dual Credit
Engineering Principles EGR 123	Forestry Management FOR 105 Dual Credit
Introduction to Computer Aided Manufacturing MAC 150	College Calculus MTH 271 & 272 Dual Credit
College Calculus MTH 271 & 272 Dual Credit	Entrepreneurship BUS Dual Credit

Crossroads Institute, a partner in the proposed Academy, is a significant driving force behind the area's entrepreneurial development. The mission of the Crossroads Institute is "...to contribute to the revitalization of the region's economy and offer a brighter future for our citizens through an innovative center for educational and economic development." Indeed, the Crossroads Institute is fulfilling its mission with a commitment to provide facilities for classes within this academy and with participation in committee meetings. Crossroads is a unique partnership composed of educational institutions and economic developers, as well as state, local, and federal government agencies. In addition to housing the Southwest Regional Enterprise Center, a mixed-use

business incubator facility including business assistance and consulting services, Crossroads houses a technology-enhanced education center. This education center provides high-demand technical curricula and occupational programs for high school and college students. There is also a continuing education center at the facility. In partnership with Wytheville Community College the facility hosts the aforementioned CREATES program as well as a Construction Technology Diploma program on its campus. A clear nexus between Crossroads and the career preparation needs of the area's high school students is realized by the director of the Crossroads Institute, who is a past Superintendent of Carroll County Public Schools.

### **C. Fiscal Agent**

Carroll County Public Schools agrees to serve as the lead partner for the BRCGATE. As a public entity, CCPS also agrees to serve in the capacity as the fiscal agent. The signed Memorandum of Agreement in Appendix H outlines the partner agreement specific to CCPS acting as the fiscal agent for BRCGATE.

### **Part III – Program Description**

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

#### **A. A statement of program goals addressing the criteria outlined on the Proposal Review Checklist items 1-6:**

##### *1. Rigorous academic content with career and technical instruction*

The BRCGATE will build upon the strengths of its constituent members. All three school systems currently have active and comprehensive career and technical

programs. Each school system will contribute willingly and enthusiastically from offerings unique to the particular system. In cooperation with Wytheville Community College, an Associate's Degree program has been implemented in the BRCGATE service region high schools. High school students can enroll in this program as early as their sophomore year and can obtain an Associate in Science Degree concurrently with a high school diploma through enrollment in dual credit courses and attending summer sessions at WCC. The BRCGATE would be able to expand pathway options that would include a Pre-Engineering Program for students in the service region. Currently, the Carroll County system has dual credit programs in network systems (CISCO), computer programming, and software development (ORACLE) housed at the Crossroads Institute.

*2. An emphasis on STEM career pathways*

All three school systems currently offer dual credit opportunities through a mixture of core academic and career and technical courses in each of the STEM areas. An example of the collaborative efforts would be the Galax system contributing in the area of dual credit physics instruction, Carroll County with dual credit chemistry, and Grayson County with dual credit statistics. In addition to the dual credit mathematics courses, Algebra, Functions, and Data Analysis courses will be provided to students enrolled in the BRCGATE program.

*3. Individualized high school plans to ensure aligned courses and career goals*

Each student in the Academy will have an individualized high school plan that is initially developed during the second semester of their seventh-grade year consistent with the requirements of the Virginia Department of Education (VDOE). These plans will be updated annually to reflect any changes in curriculum choices within the plan of study in

their chosen career pathway (See Attachments A-G). Utilization of the Virginia Wizard skills and interest inventories as well as the proposed online individualized plan of study will be implemented for each student enrolled in the Academy. Each student's individualized plan of study will meet the graduation requirements of both the Technical and Advanced Technical Diploma.

4. *Evidence that graduates will complete a college- and work-readiness curriculum*

Consistent with the Commonwealth Scholars Program (CCPS is one of the eleven original partners identified throughout the state.), the BRCGATE program will build upon the current core curriculum offered by partner public school systems with a focus on higher-level mathematics, higher-level science, and foreign language. The Academy will also build from established CTE Tech Prep pathways, such as the dual credit components in information technology, computer networking, electronics, pre-construction and construction.

5. *Evidence that graduates will qualify for the Technical and/or Advanced Technical Diplomas*

The school systems will be assisted in this effort through course offerings from Wytheville Community College and the Virginia Community College System (VCCS) and through assistance provided by Virginia Tech and other partners in the agreement. In addition to providing facilities to house the Academy, the Crossroads Institute will provide relevant entrepreneurial learning opportunities. With implementation of this Academy, students will benefit from increased academic rigor and new course offerings as a result of this collaboration. Student graduates choosing to participate in the program

and completing the corresponding Plan of Studies (see Attachment A-G) will qualify for both the Technical and Advanced Technical Diplomas.

*6. Incorporation of Virginia's Workplace Readiness Skills*

In accordance with the existing CTE programs in the service region and the state-developed competencies of each program, Virginia's Workplace Readiness Skills will be incorporated into each pathway represented in the Academy. The BRCGATE's partnership with the New River/Mt. Rogers Workforce Investment Board will ensure that workplace readiness skills are a major component of the curriculum. Students will obtain relevant learning opportunities through internships with STEM-related industries, such as:

- Turman Industries, a woods-based manufacturing enterprise
- Medfit Systems, a health and fitness equipment manufacturer
- Red Hill General Store, an internet based marketing firm specializing in alternative energy production.

Entrepreneurial training and the cultivation of relationships with college faculty and industry representatives will play important roles in the Academy's network of support and guidance to assist students toward achieving their college and career goals.

**B. A statement of program objectives and performance measures addressing the criteria outlined on the Program Review Checklist items 1-10:**

To improve the academic achievement of CTE students the Academy will break down barriers between core academics and career and technical education. This objective will be accomplished by increasing the rigor of the program of studies for all participants consistent with or exceeding the Commonwealth Scholars Program. The Academy will incorporate relationships with business, industry, and institutions of higher

education as well as provide relevancy to real-world application through career and technical pathways. Each student will be provided with appropriate scaffolding and support throughout the program achieved through collaboration between partners in the Academy. In keeping with best practices for economically disadvantaged students as noted in work by Ruby K. Payne ([A Framework for Understanding Poverty](#), 1996, Chapter 9, Creating Relationships, pages 142-146), the Academy will ensure the occurrence of consistent and extensive monitoring and follow up with individual students.

The Academy will break down barriers between high school and postsecondary education and training through the student's successful completion of dual enrollment courses. Increased use of dual credit enrollment courses will be accomplished through joint efforts with Wytheville Community College to identify and offer courses within each career pathway. As a result of the increased dual enrollment completion, students may have the opportunity to acquire an Associate's Degree with the partnering institutions of higher education. For example, Carroll County High School currently offers 14 academic and 42 dual credit classes to its students resulting in a collaborative relationship that continues to grow. Efforts are ongoing through WCC to secure and expand dual enrollment agreements with four-year institutions, such as Virginia Tech.

The Academy will provide the necessary link between education and the workplace by providing workplace experiences for students through strong relationships with business and industry. Work site visits, summer and school-year internships, and job shadowing experiences for students will be conducted utilizing the career integration concept. One example of such a relationship is between Turman Industries and the

school systems. Turman Industries has committed to providing workplace experiences that include building construction and manufacturing processes for Academy students.

A solution to increasing graduation rates and reducing drop-out rates is to deliver a well-defined and rigorous sequence of courses relevant to each student's career interests, aspirations, and aptitudes. Research indicates that at-risk students enrolled in career and technical programs that are provided with relevant educational experiences are more likely to graduate high school than their peers enrolled in a general education curriculum (Stephen Plank, Stephanie DeLuca, and Angela Estacion, Dropping Out of High School and the Place of Career and Technical Education, St. Paul: National Research Center for Career and Technical Education, University of Minnesota, 2005). The plans of study for the career pathways in Environmental Service Systems and Natural Resource Systems, Design/Pre-Construction, Construction, Pre-Engineering, Programming and Software Development, and Network Systems (see Part II-B, pages 6-13 for CTE pathway descriptions) are located in Attachments A – G.

Through early student exposure to a well-defined plan of study and postsecondary education, the Academy will increase enrollment and retention in postsecondary education. Students enrolled in the BRCGATE program will participate in the Virginia College and Career Readiness Initiative (VDOE, September 2010, [http://www.doe.virginia.gov/instruction/college\\_career\\_readiness/resources/introductory\\_briefing.pdf](http://www.doe.virginia.gov/instruction/college_career_readiness/resources/introductory_briefing.pdf)). In addition to dual credit offerings through Wytheville Community College, Virginia Tech has committed to providing educational experiences for Academy students.

Virginia Tech STEM offers its support through its outreach initiative to promote excellence in Virginia's K-12 education in STEM. Over 40 programs at Virginia Tech are involved in this effort. One opportunity identified is within the College of Agriculture and Life Sciences. A pilot program is being developed that will allow high school students enrolled in the agriculture programs to work collaboratively with Virginia Tech faculty and graduate students to conduct research and participate in lab activities at the CCPS Research Farm and at the proposed lab facility at Crossroads Institute. The research farm operated by CCPS's agriculture department is one of two high school operated facilities within the state. In collaboration with Virginia Tech, the partnership has the potential to become a model program for agricultural research and training at the secondary level.

The new Virginia Tech graduate program in Engineering Education, in concert with the Graduate School's Citizen Scholar experiences, would connect talented graduate students in engineering at Virginia Tech with classes at the Academy. The Virginia Tech Engineering Education Program (Graduate College Catalog, 2010 - 2011) incorporates theory with real-life application so that its students are prepared to be teacher/scholars in the evolving engineering education field. Many of its graduate students will share their knowledge and gain professional experience by teaching and coordinating workshops in first-year courses at the Academy.

An increased proportion of students will complete a college- and workplace-ready curriculum in high school through the active marketing of each student's plan of study to parents and students. A plan of study implemented at the start of the students' eighth-grade year that includes the coursework needed for their chosen career pathway for the

rest of their secondary and postsecondary careers will provide them with the background knowledge and foundational skills necessary to be successful. Students and parents will be made aware of tuition incentives and cost savings as well as career opportunities and earnings potential generated by participation in these programs.

The BRCGATE will reduce the proportion of students requiring remediation in college by providing students with a more rigorous plan of study geared toward improving the necessary reading, writing, mathematics, and problem-solving skills needed to be successful at the postsecondary level. Through the increased rigor, relevance, monitoring, and support systems to be provided in this academy, a greater proportion of students will achieve at high levels of academic performance in their chosen course of study at the college level.

The number of industry certifications awarded to high school CTE completers will be increased by expanding the career pathway offerings with which industry certifications are awarded and by targeting a differentiated student population which has not previously had the opportunity to earn these certifications. The plans of study provided in the attachments identify state-approved industry certifications for each pathway.

By offering the programs detailed in the attachments, existing businesses and industries will have a larger pool of candidates for high-wage, high-skill careers. This pool of candidates will be an incentive for new businesses and industries to locate in the area, creating more opportunities for Academy graduates. In addition, the entrepreneurship component will allow for the start up of such businesses and industries by academy graduates.

Table D below outlines each of the program objectives for the Academy and the performance measure for each.

**Table D**

<b>Objective</b>	<b>Performance Measure (Target dates for each)</b>
Improve academic achievement of Academy students	An increase of 10% of students enrolled in the BRCGATE will achieve advanced level proficiency on Virginia Standards of Learning (SOL) end-of-course mathematics and science assessments by the end of the 2013-2014 school year
Increase completion of dual enrollment courses	The percentage of students completing dual credit classes will be at or above 90% by the end of the 2013 -2014 school year
Provide workplace readiness experiences for students through strong partnerships with businesses	The number of business partnerships offering workplace experiences will increase by 20% over the next two years
Increase high school graduation rates	Students enrolled in the BRCGATE will achieve a graduation rate at or above 90% annually
Reduce dropout rates	Students enrolled in the BRCGATE will have an annual 7-12 dropout rate of less than the state average of 1.76%
Increase enrollment and retention in postsecondary education	Students enrolled in the BRCGATE will show a 10% increase in enrollment and completion in postsecondary education by the end of the 2013-2014 school year
Increase the proportion of students completing a college and workplace ready curriculum in high school	Students enrolled in the BRCGATE will show a 10% increase in completing a workplace readiness curriculum in high school by meeting the requirements of the Virginia College and Career Readiness Initiative by the end of the 2013-2014 school year
Reduce the proportion of students requiring remediation in college	Students enrolled in the BRCGATE requiring remediation in college will be reduced by 20% by 2014-2015
Increase the number of industry certifications awarded to high school CTE completers	Students enrolled in the BRCGATE will achieve industry certifications at a 5% higher rate than the state average within 2 years
Increase the number of graduates employed in high-wage, high-demand and high-skill careers	Students graduating from the BRCGATE program will obtain successful employment in a high-wage, high-demand, and high-skill career at a 10% higher rate than their peers graduating with a Standard Diploma within 5 years of graduation

**C. A brief description of the program addressing the criteria outlined in 1-7:**

The Academy will be centered at the Crossroads Institute in Galax, Virginia. Courses will be provided at both Crossroads and at the three school locations. Although most course content will be provided through live instruction and experiential activities, some coursework can be completed in a virtual format. There is also potential to expand the program to neighboring school systems through the virtual learning format.

The number of students proposed to be served in each career pathway (see Part II-B, pages 6-13 for CTE pathway descriptions) is provided in Table E below:

**TABLE E**

<b>Pathway</b>	<b>Student Numbers</b>
Pre-Engineering	40 Students/year
Network Systems (CISCO)	20 Students/year
Computer Programming and Software Development (ORACLE)	20 Students/year
Design/Pre-Construction	30 Students/year
Construction	50 Students/year
Environmental Service and Natural Resource Systems	40 Students/year
Food Production and Processing Systems/Power Structural and Technical Systems	40 Students/year

It is anticipated that the development of career pathways and entrepreneurship training in this Academy may impact the program design of other school-based academic and career and technical education programs. The BRCGATE will serve students from each of the three localities in grades 9-12 with dual credit opportunities beginning in grades 11 or 12.

Curriculum design, as well as courses required in each program area, and related careers and industry certifications for the pathways are detailed in Attachments A - G. Each student will be provided with appropriate scaffolding and support throughout the program through collaboration between partners in the Academy. In keeping with best

practices for economically disadvantaged students as noted in work by Ruby Payne, the Academy will ensure the occurrence of consistent and extensive monitoring and follow up with individual students. The Academy will provide workplace experiences for students through building strong relationships with business. Work site visits, summer and school-year internships, and job shadowing experiences will be conducted utilizing the career integration concept. The Crossroads Institute and the three partnering school divisions will provide relevant entrepreneurial learning opportunities and will host the courses outlined in the pathways. The majority of students that participate in courses at the Crossroads Institute will do so on a part-day basis with the remainder of the day spent at the home school or interning at a local business. Through Wytheville Community College and Virginia Tech, opportunities will be provided for collaboration between Academy students and teachers and college-level faculty and graduate students. The Virginia Tech STEM Initiative, College of Agriculture and Life Sciences, and the Virginia Tech Engineering Education Program will provide far-reaching opportunities to enhance the educational experiences and learning of Academy students and enhance the instructional capacities of Academy faculty. Relevant professional development opportunities will be provided to Academy faculty and staff.

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

Carroll County Public Schools, a partner in the Academy, has applied for the Governor’s Exemplary Standards Award Program for Career and Technical Education for its Building Trades program under the Construction Pathway (see pages 8-9 for description). Appendix I contains the completed nomination form for the award. Each of

the program areas will eventually apply for exemplary status once the Academy is in operation.

### **E. Program and Course Descriptions**

#### **E.1 At least two well articulated career pathways must be included that meet criteria a – d from the Program Approval Checklist**

A Plan of Study for each of the proposed BRCGATE programs is provided as Attachments A – G. Please note that only the secondary and two year community college components of the pathways are complete for the Environmental Services Systems/ Natural Resources Systems and the Food Production and Processing Systems/Power Structural and Technical Systems programs (see pages 9-10 for description). The university postsecondary components of these programs are currently under development with the assistance of the Agriculture and Life Sciences Department at Virginia Tech.

#### **E.2 List all of the requirements for successful program completion**

The BRCGATE students will meet all of the requirements of the Virginia Department of Education for completion of a career and technical program as well as meet the requirements of the VCCS or four year institution in which they are enrolled for dual credit classes. This will include the successful mastery of at least 80 percent of the student competencies required of the CTE class, participation in industry certification testing, successful completion of academic coursework, and fulfillment of the requirements of the college level course material as outlined in the college syllabus. Students must also meet the requirements for graduation from their home high school and the VDOE.

**E.3 Academy graduates must meet one or more of the benchmarks by the criteria indicated in items a - c:**

All BRCGATE students will participate in industry certification testing for all CTE program areas offered by the Academy. Those students who do not successfully earn the industry-based credential will have their portfolios of work completed during their enrollment in the CTE program evaluated by a committee of college and high school faculty and administration to determine success in the program. Students can earn at least nine dual enrollment credits through Wytheville Community College and in some instances obtain an Associate Degree by completing additional college courses during the evening or summer semesters.

**E.4 Significant work-based experience must be included representing additional instruction or training beyond the classroom as identified in criteria a – g.**

Students enrolled in the BRCGATE will participate in internships offered through their home high school and local business and industry partners, as well as partners identified in the BRCGATE Memorandum of Agreement. Students may also participate in work-study and job shadowing programs offered by their individual high schools. An important component of the BRCGATE program will be project-based learning experiences utilizing the resources of both the public high schools and those of the partnering businesses and industries. For example, BRCGATE will utilize the CCPS Research Farm for hands-on and research-based activities as part of their educational experience. Future partnerships with the Fuller Center for Affordable Housing and the construction program will allow students to participate in service learning projects through home construction for economically challenged members of the community seeking affordable housing.

**F. Length of program and daily schedule: Governor’s Career and Technical Academies are defined by program content, not by the location or delivery system of courses. Evidence of the designation of full day or part day, academic year program must be submitted:**

The BRCGATE will operate on the same schedule as the public school divisions it serves. It will meet the standards set forth by the *Regulations Establishing the Standards for Accrediting Public Schools in Virginia*, 8VAC 20-131-110 for awarding a verified unit of credit for graduation. Courses taught on-site at the Crossroads Institute will also meet the same requirements.

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

Carroll County Public Schools will serve as the fiscal agent for the BRCGATE. A statement of assurance is provided in Appendix H signed by the superintendent of CCPS. All partnering school systems are committed to sustaining the Academy both in spirit and practice. In addition to in-kind contributions from Academy partners, constituent school divisions, with approval from the fiscal governing body, will contribute local funding and are willing to designate portions of Perkins and state equipment money for this purpose. The Academy will also actively pursue grant funding. If additional funding is made available through the Governor’s Office, the Academy will pursue this funding, as well.

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

Equipment and materials will be provided to each program area in accordance with the local school division policies concerning appropriation of materials and equipment. Each division receives federal Perkins Act and state equipment monies that

can be used in the procurement of equipment for the respective programs. Current funding sources are being pursued in collaboration with the Virginia Tech College of Agriculture and Life Sciences, Workforce Investment Board Area II, and Carroll County to fund the development of a working laboratory complete with equipment to be utilized in conjunction with the CCPS's Research Farm. The MOA ensure that each agency involved in the BRCGATE project will share resources to guarantee the success of the Academy.

**I. Evidence of an internal evaluation process to effect program improvement as outlined in criteria 1 – 4:**

The Academy will participate in the Governor's Exemplary Standards Program nomination process for each of the pathways and will work diligently toward the status of *Governor's Exemplary Program*. Through this program, the Academy will undergo a continuous quality improvement process. In working to earn this distinction, the Academy will set high academic standards; improve other measures of program quality; strengthen partnerships and alignment with postsecondary education and industry; and demonstrate relevant and positive outcomes. Participation will provide a criterion-referenced process to ensure continuous improvement. Performance indicators will be measured in three areas: program quality, educational significance, and evidence of effectiveness and success.

Staff evaluations will be conducted in accordance with school board policies to ensure program effectiveness and that faculty members are engaged in the success of the program. Stakeholder feedback will be gauged from satisfaction surveys distributed to stakeholders, student and employer follow-up surveys required by the VDOE, and advisory committee meetings.

All three school systems have information technology departments in place and administrative personnel to assist with and coordinate data collection and reporting. School systems will be assisted by the VCCS and the VDOE in collecting student pathway data. Examples would include the Student Enrollment Demographics Report, Completer Demographics report, and End of Year records collection required by the VDOE. The Academy is well positioned to institute measurement of post-graduation outcomes through the partnerships established with the postsecondary institutions. The Academy will be included in the evaluation model implemented by the Southern Association of Colleges and Schools and utilized by the partnering school divisions in their accreditation process.

#### **Part IV - Administrative Procedures**

**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 partnerships:**

The role of business and industry, public school divisions, postsecondary institutions, work force and economic development entities, as well as non-profit institutions, are outlined in the MOA (Appendix G). Each entity that has signed the MOA is included with future entities to be added as partnerships are developed.

**B. Student recruitment, selection criteria, and admissions:**

Student recruitment into the BRCGATE will begin in grade 7 when students make their first selections for their academic and career plans. Upon entry to grade 10, students will be invited to submit an application for admission to the Academy. Admission to the program will be determined by a committee of instructors, counselors, and administrators with consideration given to student GPA, progress toward the goals of their academic and

career plan, and teacher recommendations. A short essay explaining their interest in the STEM-related program area will also be required.

**C. Code of student conduct and attendance**

Student discipline, attendance, and safety will be handled in accordance with the policies and practice of each participating school division and/or provider of services. In addition students may be removed from any of the programs due to poor attendance or violation of school policies.

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

Students will be transported for courses offered off-site whether within the divisions or at Crossroads Institute through the use of the local transportation system, unless otherwise designated. Each school division is responsible for the transportation of their students.

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

All instructional staff employed by the public school divisions participating in the BRCGATE will meet the requirements for teacher licensure as outlined in *Code of Virginia* 8VAC 20-22-10 et. seq. Postsecondary partners in the BRCGATE will meet the requirements as set forth by the VCCS or the university in which they are employed. Secondary and postsecondary teachers working in the BRCGATE program will have industry certifications or endorsements in the pathway they teach.

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

The BRCGATE instructional staff will be required to participate in local, state, and national professional development activities while maintaining the requirements of professional licensure. Workshops will be conducted for BRCGATE staff particular to the BRCGATE program area. Time for collaborative curriculum development between secondary and postsecondary instructional and administrative staff will also be provided. Currently, the CCPS Science and Agriculture Department instructors are working collaboratively with the Department of Agricultural and Extension Education at Virginia Tech and the College of Science at Virginia Tech to develop a lab-based Biotechnology curriculum for utilization across the Commonwealth. Instructors involved in the program are also receiving professional development in the use of cutting-edge lab equipment utilized at the Virginia Tech research facility. Federal Perkins Act funding will be utilized for the BRCGATE instructional staff to participate regularly in the VDOE summer conferences and workshops as well as dual credit curriculum development workshops with Wytheville Community College. Planning time for instructional staff will be provided in accordance with 8VAC 20-131-240 of the *Regulations Establishing the Standards for Accrediting Public Schools in Virginia*.

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

The BRCGATE instructional staff shall be evaluated at the secondary school level by administrative personnel with division level evaluation instruments designed in accordance with the *Guidelines for Uniform Performance Standards and Evaluation Criteria for Teachers, Administrators, and Superintendents* provided by the VDOE. The

employing school division will utilize the timetable for teacher evaluations as set forth in §22.1-295 of the *Code of Virginia*.

**H. Parent, student and community involvement as indicated by criteria 1 and 2 a - e.**

Students will begin preparation to enter BRCGATE during middle school. Students are introduced to career clusters and pathways through exploratory classes beginning in the 6<sup>th</sup> grade. Career interest inventories and skills assessments will be provided to students through the exploratory curriculum and through the utilization of the Virginia Education Wizard provided by the VCCS. Based upon the results of their interest inventories and skills assessments, students will complete the first draft of their Academic and Career Plan collaboratively with their parents, teachers, and counselor by the end of their 7<sup>th</sup>-grade year in preparation for the plan implementation during the 8<sup>th</sup> grade. Students interested in entering the Academy will begin taking the necessary foundational academic and CTE classes during the 8<sup>th</sup> grade in accordance with their planning document.

Students in the 8<sup>th</sup> grade will participate in the Career Interpretation Phase II classes in which the student will expand their knowledge of multiple careers and the preparation necessary to be successful in those career pathways. Students will continue to participate in the VA Wizard assessment program to gauge additional areas of interest and aptitude as well as to identify areas in need of strengthening to qualify them for their chosen pathway. At this time students will revise or adjust their Academic and Career Plan in collaboration with parents, teachers, and counselors to prepare for their high school studies. The Academic and Career Plan is a working document that can be revised throughout a student's academic career based upon both interest and skills. During this

process students are made aware of the multiple postsecondary options available to them and the individualized plans are developed for the student to pursue their chosen pathway.

School counselors, as well as career coaches provided by Wytheville Community College at each of the three participating school divisions, assist students in the development of their Academic and Career Plan through the utilization of Virginia Education Wizard and individualized counseling sessions. Through these sessions, students are made aware of available diploma types, seals, and other recognitions including admission to programs such as the BRCGATE. Students are also made aware of both the academic and CTE dual credit opportunities that will provide them with a head start in their postsecondary education option. At the high school level there are many opportunities to re-evaluate and update career and academic choices including those offered by the BRCGATE.

**Part V. Documentation of insurance, budget, and other fiscal information:**

Documentation of the Property and Casualty Pool Insurance agreement from the Virginia School Boards Association for CCPS is included as Appendix J. Appendix K contains the estimated budget for implementation year 2011-2012. Finally, the budget narrative is detailed on pages 33 - 35.

Sustainability for the BRCGATE will be through local school division funding, business contributions, and additional grant funding as obtained. Each partner has signed an MOA to assure that resources which have or will be agreed upon for the implementation of the BRCGATE will include, but not be limited to; personnel, instruction, facility, staff, technology, equipment, and supplies.

## Governor's Career and Technical Academy

### Estimated Budget Narrative 2011-2012

#### A. Direct Costs

##### 1. Personnel—1000

Requested Workforce Investment Board Grant Funds

Full-time University Agriculture Professor and Research Manager =  
\$74,000

Full time Secretary = \$22,000

In-Kind

Part-time Engineering Instructor and Program Coordinator Salary =  
\$59,528.00

Agriculture Production and Natural/Environmental Resources Instructors  
x 4 = \$172,540

Construction Trades Instructors x 3 = \$124,094

Pre-construction Instructor = \$38,640

Electronics/Nanotechnology Instructor @.25 = \$12,547

Programming - Oracle Instructor @.25 = \$9,157

Networking - CISCO Instructor @.25 = \$12,690

Physics Instructor @.5 = \$26,244

Statistics Instructor @.5 = \$19,176

Chemistry Instructor @.5 = \$19,915

Part-time Bus Drivers x 2 = \$11,993

##### 2. Employee Benefits—2000

Requested Workforce Investment Board Grant Funds

Benefits for Professor and Secretary

VRS @ .1646 = \$15,802

FICA @ .0765 = \$7,344

Group Life @ .01 = \$960

In-Kind

Benefits for Instructors, Program Coordinator and Bus Drivers =

VRS @ .1646 = \$83,374

FICA @.0765 = \$38,749

Group Life @ .01 = \$5,065

**3. Purchased/Contractual Services—3000**In-Kind

\$12,126—subscription fees for software used with programs, server hosting, etc., dual credit supplements

**4. Internal Services—4000**In-Kind

Bus Transportation Costs for 3 Divisions = \$65,852

**5. Staff Development—5000**Requested Workforce Investment Board Grant Funds

\$16,000 for professional development for instructors, administrators, etc.

Perkins Funds

\$7,000 for professional development for staff

In-Kind

\$4,000 for participation in professional organization meetings and conferences

**6. Summer Component Activities—5000**Requested Workforce Investment Board Grant Funds

\$9,000 for summer campus visits and mini camps, etc.

In-Kind

\$3,000 for summer programs

**7. Travel—5000**Requested Workforce Investment Board Grant Funds

\$9,000 for travel to professional development, meetings, bus travel, etc.

Perkins Funds

\$9,000 for travel to professional development, meetings, bus travel, etc.

In-Kind

\$11,000 for travel to professional development meetings, bus travel, etc.

**8. Contractual Services—5000**State Funds

\$6,000 for Industry Certification Testing

In-Kind

\$3,000 for existing subscription fees for software training modules

\$2,500 for utilities

**9. Materials and Supplies—6000**Grant Funds

\$12,000 for marketing materials, such as brochures, printer cartridges, printed matter, etc.; lab and classroom materials, etc.

In-Kind

\$12,000 for classroom and lab materials and textbooks

**10. Equipment—8000**Requested Workforce Investment Board Grant Funds

\$90,000 for laboratory furnishings

State Funds

\$15,000 for new lab equipment

Perkins Funds

\$50,000 for new lab equipment

In-Kind

\$50,000 for new and existing computers and percentage of lab equipment

**11. Facilities—8000**In-Kind

Crossroads Facilities

2 classrooms x 616 sq. ft. x \$8/sq. ft. = \$9,856

2 labs x 1200 sq. ft. x \$8/sq. ft. = \$19,200

**B. Indirect Costs**

None

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

Academy Name	Collaborating Partners	Total Funds Requested	Allocated Funds for Postsecondary Component
<b>Blue Ridge Crossroads Governor's Academy for Technical Education</b>	<b>Carroll, Grayson Counties, Galax City Public Schools, Wytheville Community College, Virginia Polytechnic Institute, Crossroads Institute</b>	<b>392,000.00</b>	

<b>Category 1: Postsecondary Accreditation and Approvals</b>	<b>Comments</b>
1. Postsecondary institution is appropriately accredited	Both postsecondary partners, Wytheville Community College and Virginia Polytechnic are accredited by the Southern Association of Colleges and Schools
2. Proposed postsecondary program has specialized accreditation, if applicable	Postsecondary programs with specialized accreditation include: Society of American Foresters Society of Wood Science and Technology Accreditation Board for Engineering and Technology American Chemical Society, and National Institute of Food Technologists
3. Proposed postsecondary program is SCHEV and/or VCCS approved	Proposed postsecondary programs are approved by both the VCCS and SCHEV and are included in each institutions course catalogs
4. Proposed postsecondary program will be seeking SCHEV and /or VCCS approval	Any proposed program provided by either of the postsecondary institutions that may not be currently offered will seek approval of SCHEV and/or VCCS
<b>Category 2: Governor's Career and Technical Academy Requirements</b>	<b>Comments</b>
1. Evidence of a partnership with a postsecondary institution, business, or industry, and demonstrated roles for each entity	See Part II – Need/Rationale, Section B, p. 3 See Part III – Program Description, Section A & B, pp. 13-23
2. Offers at least one career pathway in a field identified by a statewide authority or organization as a strategic growth area for Virginia	See Attachments A-G
3. Offers at least one career pathway addressing regional and local work force demand in a high-wage, high-skill field identified by employers and work force officials	See Part II – Need/Rationale, Section A & B pp. 3-11
4. At least one of the two career pathways	See Part II – Need/ Rationale, Section B, pp.

is in a STEM-related field	6-11
<b>Category 3: Postsecondary/Business Component Requirements</b>	<b>Comments</b>
1. Provides opportunities for students to earn industry credentials or state licensure, associate or baccalaureate degrees, and college credit for work-based experiences	See Part III – Program Description, Sections E.3 & E.4, pp.25-26, Attachments A-G
2. Articulates with baccalaureate programs or to higher levels of training or professional credentialing	See Part III – Program Description, Sections A & B, pp. 13-21, Attachments A-G
3. Demonstrates P-16 integration including curriculum development with high school, college, and university faculty (desired)	See Part IV, Section F, p.30, Staff Development, Appendix G
4. Includes college faculty as adjunct faculty of the academy (desired)	Adjunct and full-time faculty from Wytheville Community College will serve as adjunct faculty for the academy
5. Provides opportunities for students to participate in work-based experiences	See Part III – Program Description, Section E.4, pp. 25-26
<b>Category 4: Academic Quality</b>	<b>Comments</b>
1. Requires appropriate postsecondary faculty qualifications	All BRCGATE faculty members will possess the necessary qualifications and endorsements as required by both the VDOE and the Southern Association of Colleges and Schools, Appendix G
2. Requires faculty to hold industry certification, where necessary	See Part IV, Section E, p.29 Appendix G
3. Planned professional development for faculty and administrators	See Part IV, Section F, p.30 Appendix G
4. Planned systematic program and learning outcomes assessment	The BRCGATE will be evaluated on the objectives contained in this document (Part III – Program Description, Section I) as well as all regulatory provisions of both secondary and postsecondary partners. Student success measures will be measured by academic proficiency in regards to SOL testing, career and technical competence measured by industry certification testing and competency attainment, and postsecondary preparedness by completion

	of a college and work readiness curriculum.
<b>Category 5: Administration and Funding</b>	<b>Comments</b>
1. Funding is sufficient to support effective administrative and operational needs including materials, administrative services	In-kind contributions and requested grant funds will provide sufficient funding to meet the operational and administrative needs of the Academy See Appendix K for Estimated Budget
2. Funding is sufficient to sustain faculty salaries, curriculum development costs, and instructional materials and delivery	In-kind contributions and requested grant funds will provide sufficient funding to meet the instructional needs of the Academy See Appendix K for Estimated Budget
3. Facilities possess the necessary physical attributes to deliver the instructional program (classroom space, technology, labs, equipment)	The current facilities of each partnering agency, the proposed new construction awaiting approval of the Department of Education at Carroll County High School, and new construction at Crossroads Institute will provide facilities capable of delivering the instructional program of the BRCGATE

	Industry Certification testing			Existing subscription fees for software training modules, Utilities
8. Contractual Services---5000	\$6000.00			\$5500.00
9. Materials and Supplies---6000			Requested Workforce Development Funds Marketing and Classroom material \$12,000.00	Classroom and lab materials \$12,000.00
10. Equipment---8000	New lab equipment \$15,000.00	New lab equipment \$50,000.00	Requested Workforce Development Funds \$90,000.00	New and existing computers and percentage of lab equipment \$50,000.00
11. Facilities---8000				Facility rental at Crossroads \$29,056.00
<b>B. Indirect Costs</b>				None
<b>Total</b>	\$21,000.00	\$66,000.00	\$256,106.00	\$826,246.00

**\*If recovering indirect costs, the rate must not exceed the federally approved indirect cost rate of the fiscal agent.**

# Appendices

# Appendices

**Appendix A – STEM Organizational Conference for Governor’s Academy Agenda**

**Appendix B - STEM Organizational Conference for Governor’s Academy Sign In Sheet**

**Appendix C – STEM Organizational Conference for Governor’s Academy PowerPoint Presentation**

**Appendix D – Partner Identification List**

**Appendix E – Partnership Identification Forms**

**Appendix F – Advisory Committee**

**Appendix G – Memorandum of Agreements**

**Appendix H – Statement of Assurances**

**Appendix I – Exemplary Standards Nomination Form**

**Appendix J – Property and Casualty Pool Insurance Agreement**

**Appendix K – Estimated Implementation Budget**

## **Agenda**

### **21<sup>st</sup> Century STEM Presentation**

#### **Crossroads Institute**

**June 18, 2010, 10:30 AM – 12:30 PM**

- Welcome and Introduction
- Presentation on The Future of STEM Education in the Twin Counties
- Governor's Career and Technical Academy Designation:
  - Proposed Blue Ridge Crossroads Governor's Academy for Technical Education
  - Next Steps
  - Partnership Identification Forms
  - Memorandums of Agreement
  - Formation of Advisory Committee
  - Submission of Application
    - Part I and II – Due July 1, 2010
    - Part III – Due July 30, 2010
    - Part IV – Due August 16, 2010
    - Complete Proposal – Due September 1, 2010
  - Presentation to Virginia Board of Education – October 28, 2010
- Discussion
- Recommendations
- Lunch – Provided by Squealers Barbecue

Appendix B

## CARROLL COUNTY PUBLIC SCHOOLS

605-9 Pine Street  
HILLSVILLE, VIRGINIA 24343

FAX: (276) 730-3210

TELEPHONE: (276) 730-3200

(276) 236-8145



June 11, 2010

Dear

The School Board and Administration of Carroll and Grayson Counties and the City of Galax understand the critical role of the public schools in the economic development of this region and embrace the unique challenges of a global economy. Further, we understand the shifting paradigm of skills and academic competence necessary for occupational success as technology flattens the global landscape. In response to the need for additional training in the area of STEM (Science, Engineering, Technology and Math) education the region schools would like to invite you to attend a presentation at the Crossroads Institute on Friday, June 18 at 10:30 in the large conference room to discuss educational opportunities and partnerships to address the academic and workforce needs of our community.

This presentation will be the first of many, which will dictate the future discussions we will facilitate regarding STEM. It is our hope these discussions will continue regionally and include future partnerships with institutes of higher learning, business and industry, and other community organizations. The possibilities of this program will be enhanced and made possible through the creation of the Blue Ridge Crossroads Career and Technical Education Academy. The scope of the program will create laboratory environments conducive to the investigation and promotion of STEM courses and concepts at the area high schools and the Crossroads Institute through the expansion of dual credit course offerings and technical training.

Please RSVP Sharon Beasley in the Office of Instruction at 276-730-3214 or [@ccpsd.k12.va.us](mailto:ccpsd.k12.va.us) to confirm your attendance. A catered lunch will be provided for all attendees.

Sincerely,

James G. Smith  
Superintendent

A handwritten signature in cursive script that reads "Mark A. Burnette".

Mark A. Burnette  
Director of Middle and Secondary Education

STEM Organizational Conference  
 Governors Academy  
 Friday June 18, 2010

Name	Title	Business	Email	Phone Number
Marty Holliday	Planner	nelme wvs	mholliday@comcast.net	540-633-6764 540-357-0651
<del>Donna Williams</del>	<del>Assoc. Business</del>	<del>State</del>	<del>whugh@delmar.wes.edu</del>	<del>276-333-4100</del>
Linda Ferguson	Red Hill General Store	11 11	evic.l.ferguson@yanow.com	8100-251-8824
Scott Watson	Principal	CGHS	skwata@ccpsd.k12	
Roland Hall	AP	'	rnhall@ccpsd.k12	
Paul Wurstorfer	DEAN	VT AVRIZ	PSTORFER@VT.EDU	
Bob Mollenbury	Director	VT AVRIZ	bobm5@vt.edu	540-231-8859
Sarah Jones	Marketing + Bus. Dev.	Red Hill General Store	jones@redhillgeneralstore.com	276-780-4324
Jeremy Dyle	Project Manager	The Turnman Group	jeremy@theturnmangroup.com	276-733-4534
Karen Bellins	CTE Admin/Tech Coord	Grayson Co Schools	karen@grayson.k12.va	876-773-2751
Rebecca Cardwell	Asst. Superintendent	Galax City Schools	rebecca.cardwell@ccps.k12.va.us	836-2911
Shelie McNeal	Comm. Mgr. Spnd	Jones High Sch	RABO@L.McNeal@STEEC.Louis.Com	335-3200
Theresa Holt	Exec. Dir.	VA Tech	tholter@vt.edu	
Whitney Bohan	Exec. Dir.	VA Tech	wbohn@va.gov	
Dee McBride	Exec. Dir.	Crossroads Inst.	dmcbride@crossroadsva.org	276-736-0391
Cheryl Stacey	Director	CCSA	chris@chestnutced.org	276-236-236
Paul Lambert	General	Blue Ridge Mtn	plambert@ccpsd.k12.va.us	7149-3619
Paul Beroth	Director	Carroll Co. Public Schools		(276) 730-3217

-3500

The future of

**Science**

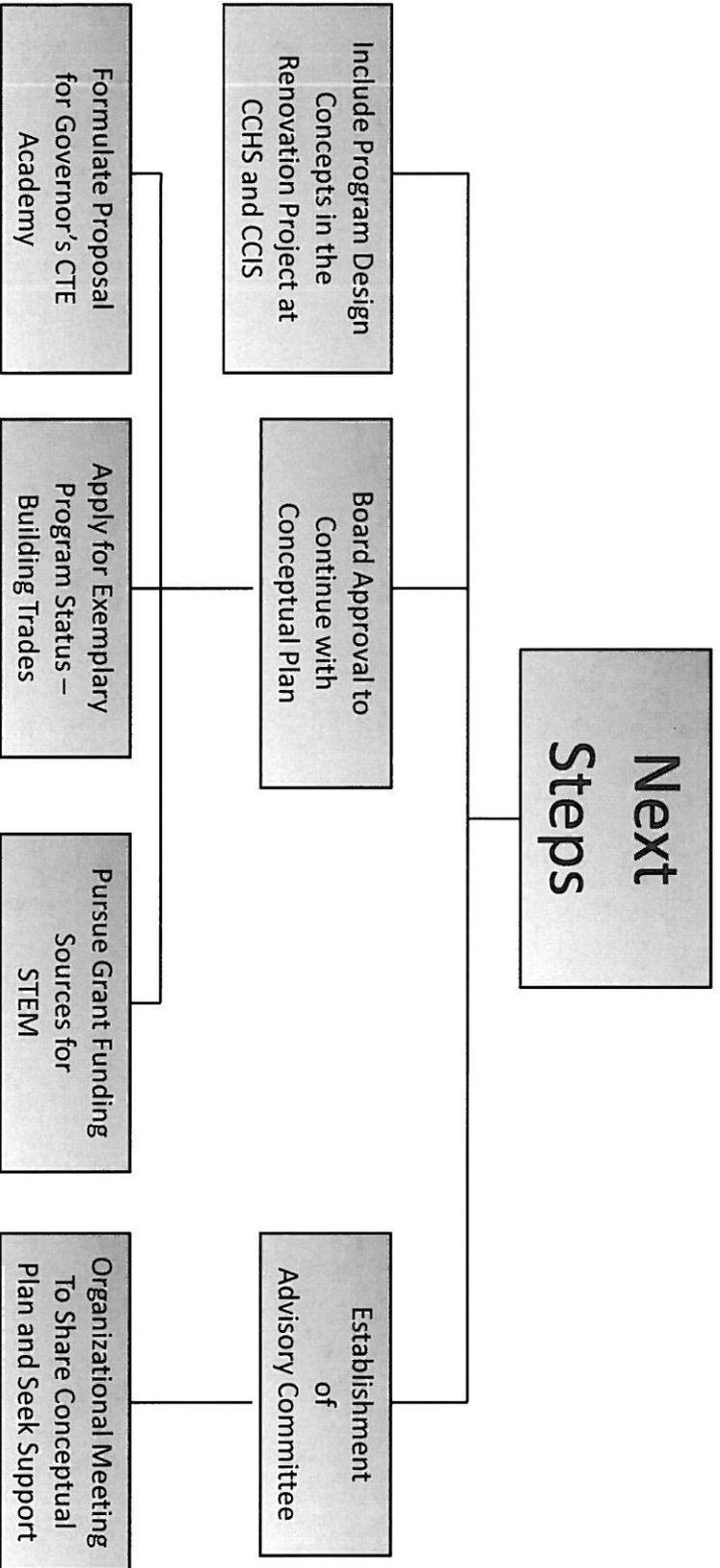
**Technology**

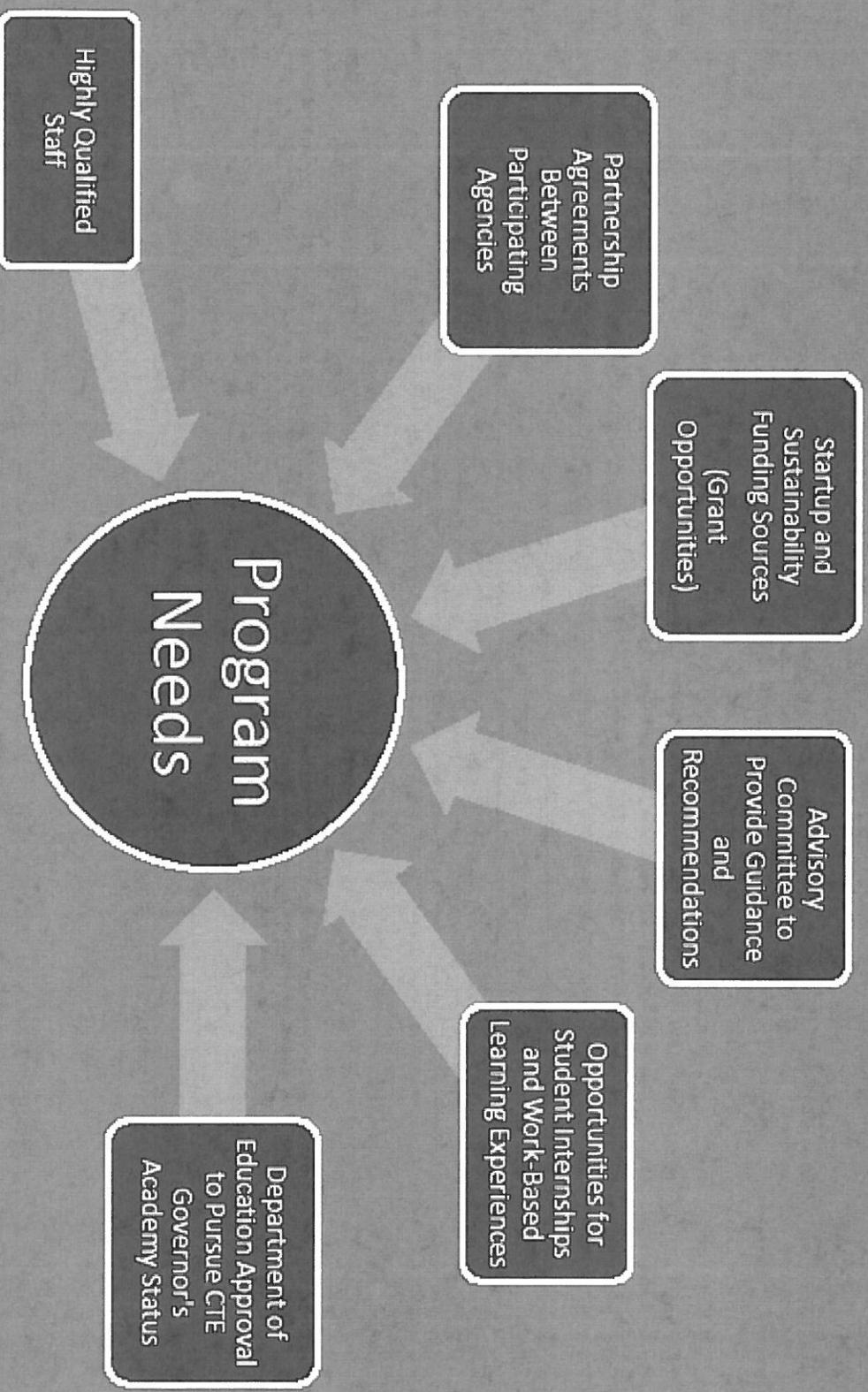
**Engineering**

**Mathematics**

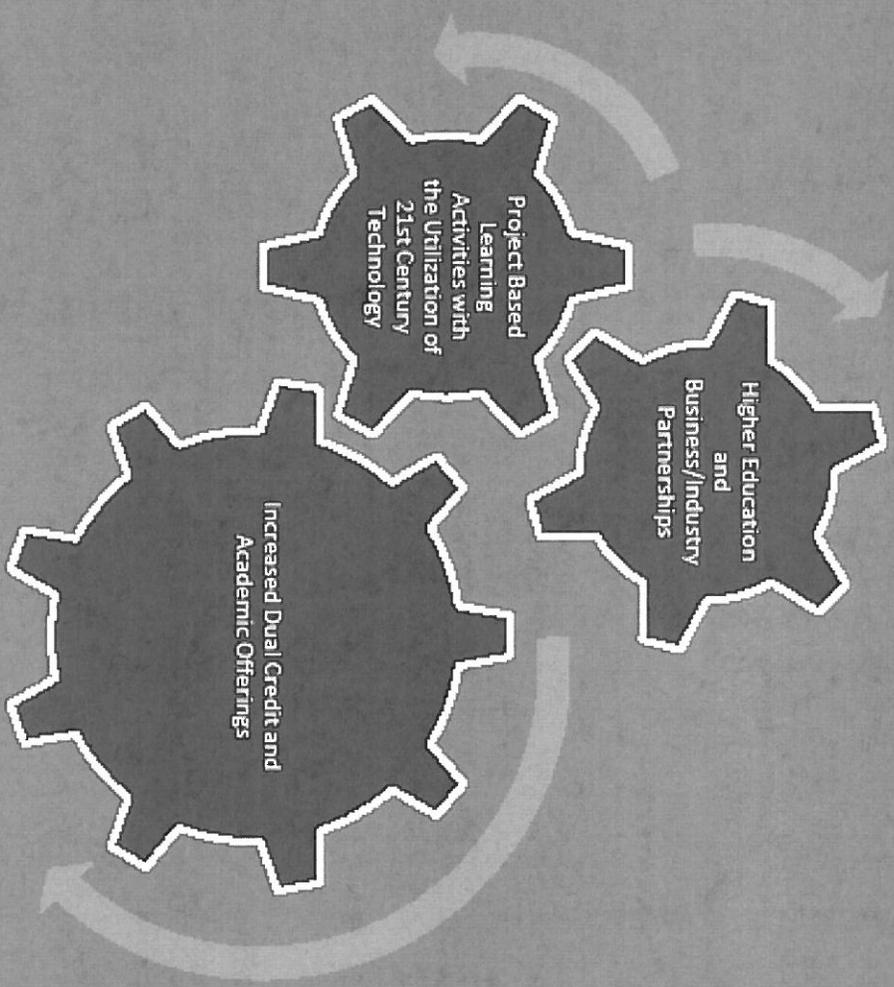
Education in The Twin Counties

Prepared by: Mark Burnette, Ed. D.  
June 8, 2010





# Program Design Concepts



## Potential Partners

- Carroll County Public Schools
- Galax City Public Schools
- Grayson County Public Schools
- Wytheville Community College
- Virginia Polytechnic Institute
- Crossroads Institute
- Rural Development Authority
- Lowes Home Improvement
- Turman Industries
- MOOG Industries
- Red Hill General Store
- Carroll and Grayson Counties
- City of Galax
- New River / Mount Rogers
- Workforce Investment Board
- Virginia Cooperative Extension

# “Green”

## Careers and Training

Over 340 green career potential occupations are available in 15 of 16 different career clusters. Examples include:

Agriculture, Food and Natural Resources

•Agricultural Inspectors, Environmental Protection Foresters, Sustainable Landscape Workers and Supervisors, Alternative Fuel Production Technicians, Cleantech Fabricators, etc...

Architecture and Construction

•Green Building Carpenters, Masons, Plumbers, Roofers and Electricians, Solar, Thermal and Wind Energy Technicians, and Installers, Cleantech Drafters, CAD Technicians, Engineers and Construction Managers

Information Technology

•Green/Sustainable Energy Organization Computer Programmers, Support Specialists, Managers, Network Systems Administrators and Software Engineers

Science, Technology, Engineering and Mathematics

•Agricultural Engineers, Biological Technicians and Engineers, Biomass Technicians and Engineers, Nanotechnology Engineers and Technicians, Green Building Materials Designers, Environmental Science Engineers and Technicians, Cleantech CMC Programmers, Cleantech Electrical and Electronic Technicians

# Governor's CTE Academy

Agriculture Science program with focus on material fabrication, CAM, agriculture production, natural resource management, greenhouse production, biological and ecological processes to reduce our carbon footprint

Building Trades with a focus on "Green" construction

Information Technology – Networking Systems, Database Design and Management

Updated Drafting curriculum focused on CAD/CAM and Animation

Updated Electronics Curriculum focused on Robotics and Nano-technology

Programs housed at division schools and the Crossroads Institute



**Office of the Secretary of Technology**

*Nothing But Questions*

**Can Career and Technical Education Address a Curriculum Gap?**

Theoretical Physics

Experimental Physics

Algebraist  
Geometer  
Topologist  
Statistician

Physicist  
Chemist  
Biologist  
Lab Physicists  
Astronomer

Aerospace  
Automotive  
Electronics  
Computer  
Civil

Wind Tunnel  
Aircraft Maint  
Airframe/Powerplant  
Particle Detectors  
Integrated Circuits

Traditional  
Welding  
HVAC  
Electricity

"Discover languages to quantitatively describe existing world"

"Discover & describe existing world"

"Design & build new systems"

"Design & build new components"

21st Century  
At-Comp Repair  
Comp Network Adm  
Model & Sim

4-yr college (+)

4-yr college (+)

4-yr college (+)

2-yr college/OJT

"Traditional Academic?"

Current K-12 "Gap"

CTE

"Build or fix existing systems/components"  
HS with national certifications

**Skill Components**



\* Sometimes "Instrument Maker"

# STEM

Math  
Options

Algebra for all 8<sup>th</sup>  
grade students

Algebra,  
Functions and  
Data Analysis

College Pre-Calculus  
MTH163 Dual Credit

Science  
Options

Biology 101 &  
102 Dual Credit

Chemistry 111 &  
112 Dual Credit

Dual Credit PHY  
101, PHY 102 &  
Applied Physics

College Calculus MTH  
271 & 272 Dual Credit

Anatomy &  
Physiology BIO 141  
& 142 Dual Credit

Computer  
Mathematics ITP112  
Dual Credit

Biological  
Application in  
Agriculture

Statistics MTH 241 &  
242 Dual Credit

Veterinary Science

Engineering  
Options

Drafting/Engineering  
Graphics DRF 151 & 152

Electronics Technology  
ETR 113, 114, 156 &  
160 Dual Credit

Building Trades BLD 105,  
110, 111, 112, & 195, ELE  
110 & 115 Dual Credit

Agriculture Power Systems,  
Agricultural Fabrication and  
Emerging Technologies

Introduction to Computer  
Aided Manufacturing MAC  
150 Dual Credit

Introduction to Engineering  
Design, Principles of  
Engineering EGR 120 & 123  
Dual Credit

21<sup>st</sup> Century Technology  
Options

Technology Foundations  
Computer Control and  
Automation

Computer Systems  
Technology ITN 107 &  
200 Dual Credit

Database Design and  
Management (Oracle)  
ITD 110, 225, 250 & 256  
Dual Credit

Computer Networking  
Hardware Operations  
(CISCO) ITN 154, 155, 156,  
& 157 Dual Credit

Principles of Technology  
I & II

Manufacturing Systems  
Materials and Processes  
Technology, Digital  
Visualization

Proposed programs are highlighted

# Our Future

- If you don't plan for new careers, they won't happen.
- Our Future Priorities
  1. High-paying jobs
  2. Foundation careers
  3. Broad-based education
  4. Plan for change
- Bonus fact: 1-3% of our students/citizens will be business owners. If we educate our students in new competitive technologies, they will start companies in those fields.

# Foundation Technologies

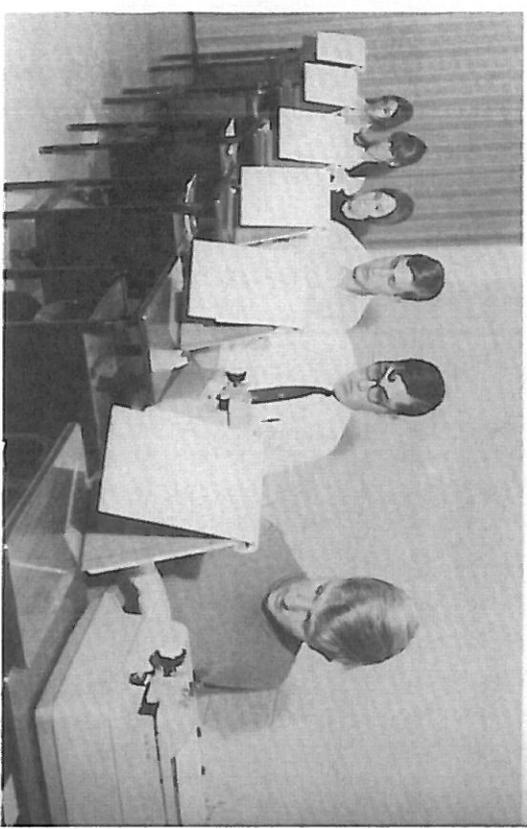
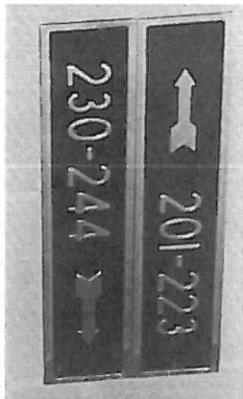
- Computer Aided Design
- Computer Aided Manufacturing
- Automated systems/Robotics
- Welding & Fabrication
- Health career occupations
- Automotive and Diesel technologies
- Culinary Arts & Hospitality careers
- Electricity, Electronics & Laser technologies
- Groundsman & Lineman technologies
- Graphics technologies
- Alternative Energy technologies
- GIS & Communications technologies
- Materials technologies

# Past

## Vocational Program Sprints Ahead

Progress is definitely the key word for the program of learning planned for C.C.H.S. The broadened curriculum offers experiences for all-scholastically, vocationally, aesthetically, and morally.

Chief among the curricular achievements is in the vocational department. Here three-hour block courses in building trades, auto mechanics, electronics, drafting, industrial arts, nursing, and cosmetology certify graduates of C.C.H.S. for a career in these fields. There are also two-hour courses in accounting and stenography.



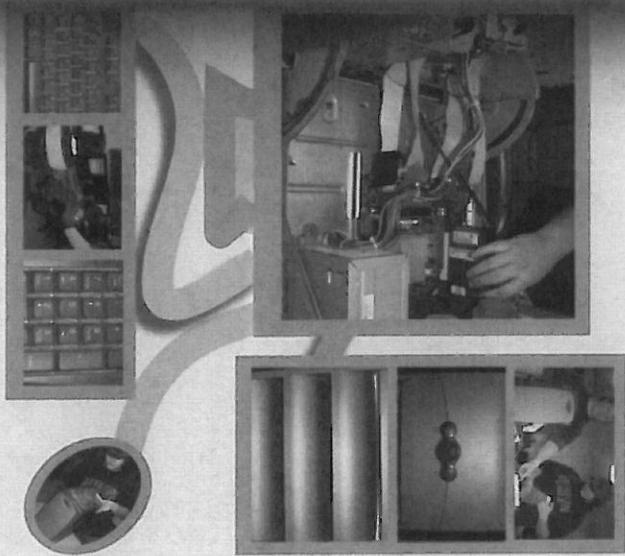
# Present

## Computer Systems *Networking for the future...*

**CST & CSCO**  
Are you interested in computers? Do you want to know what makes them work properly or do you want to know how to build one from "the ground up?" If so, this is where you should be.



**CSCO:**  
Top row: (R-L) Cody Webb, Justin Stevier, Christopher Patton, Will Bowen, Jason Nestek. Bottom Row: John Nicholson, Matthew Alderman, Eddie Justice, Jacob Kutherford, Justin Unicum.



Mr. Slater, CST Teacher

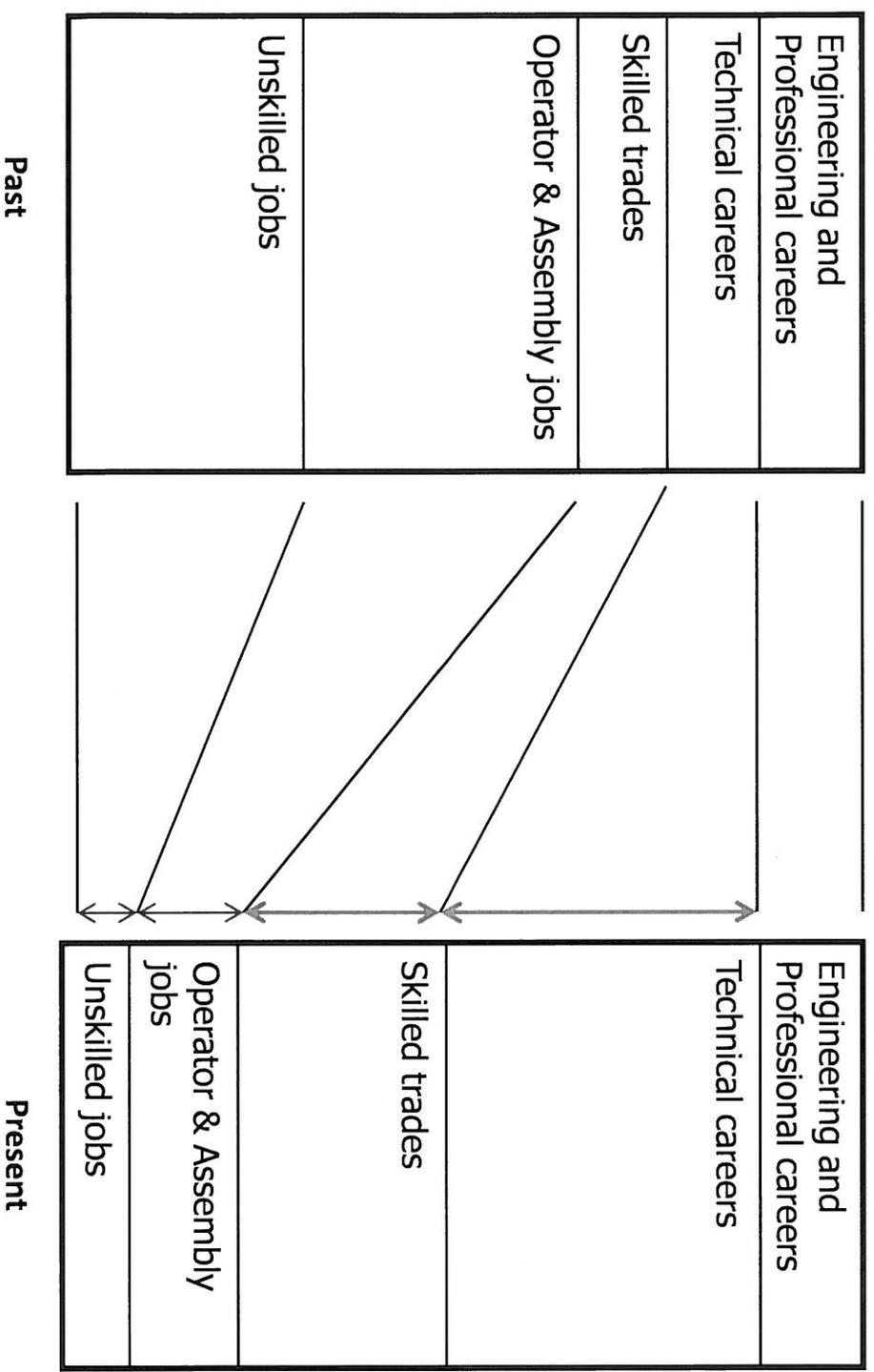


Whitney and Will Bowen working on a motherboard.



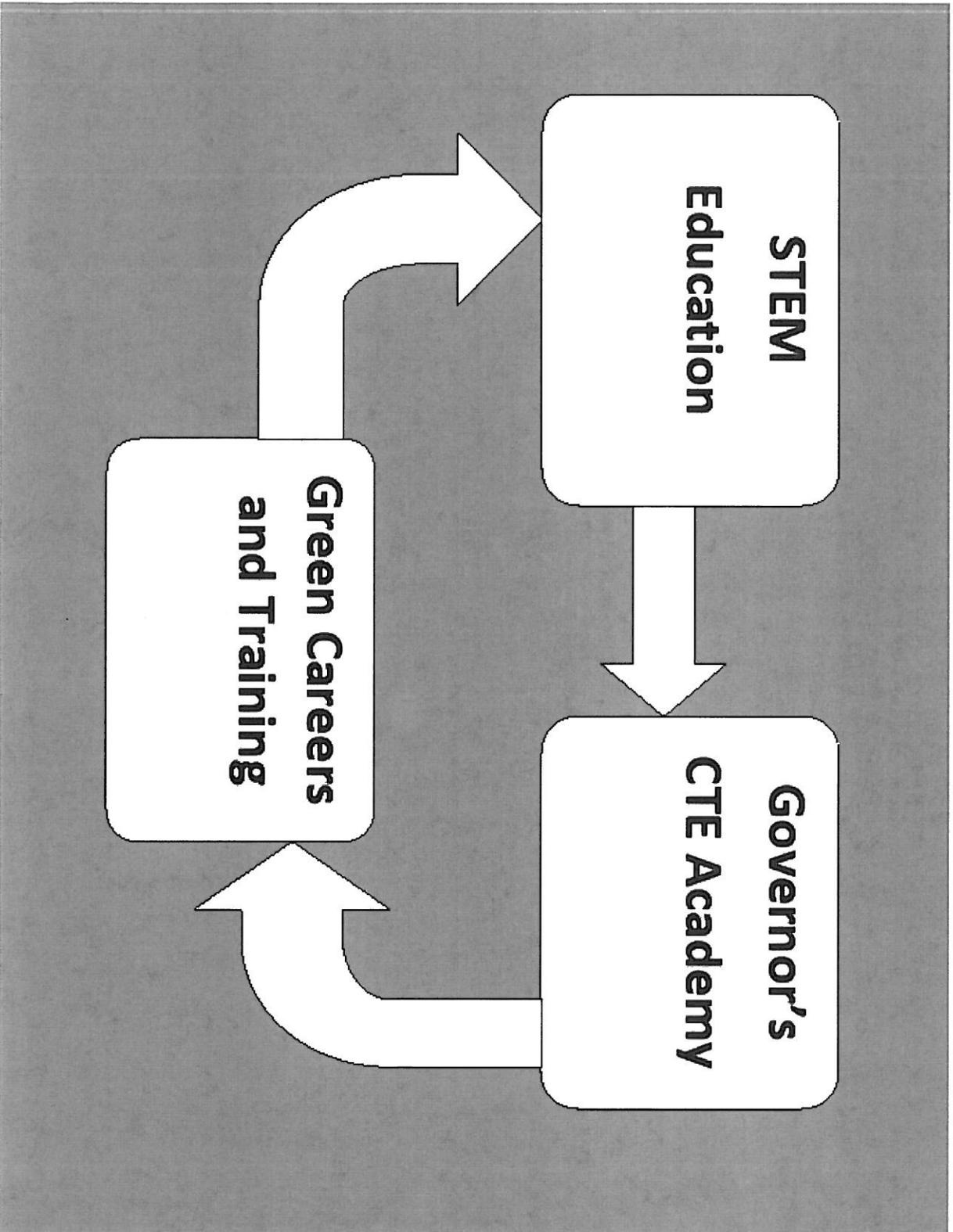
(Above) Whitney Dalton listens to a lecture in CST. Mr. Slater uses video lectures to help students learn about computers to use for students. (Right) Ashley Vaughn works on a computer program.

# How the U.S. Employment Has Changed



# Regional Economic & Technology Development Planning

- Infrastructure
  - Roads, sewer, water, electricity, broadband, recycling programs, hazardous waste removal, Coordinated Workforce Development
- Realistic education and training
  - Elementary Education – exploration
  - Middle School – Technology lab experiences
  - High School – Career opportunities, Career and Technical Education job skills
  - Community College – numerous career opportunities in technology
  - University – 4 year and higher degrees
  - Continuing Education – lifelong education, career training, advanced certificates
- Career Ladder Concept



# Questions

**Partner Identification List**

**GOVERNOR’S CAREER AND TECHNICAL ACADEMY**

**Please list information for each partner below. Please include a Partnership Identification Form (Appendix E) for each of the partner institutions/organizations participating in this proposal.**

	<b>Partner Name</b>	<b>Partner Representative</b>	<b>Representative’s Position</b>	<b>Partner Identification Form Included</b>
<b>Lead Partner</b>	Carroll County Public Schools	Mark A. Burnette	Director of Middle & Secondary Education	Yes
<b>2</b>	Turman Sawmill, Inc.	John Michael Turman	President	Yes
<b>3</b>	Red Hill General Store	Sarah Jo H. Jones	Direction of Marketing & Business Development	Yes
<b>4</b>	Grayson County Public Schools	Karen Blevins	Principal, CTE	Yes
<b>5</b>	Galax City Public Schools	Rebecca Cardwell	Assistant Superintendent	Yes
<b>6</b>	Chestnut Creek School of the Arts	Chris Shackelford	Director	Yes
<b>7</b>	New River/Mt Roger Workforce Investment Board	Marty Holliday	Program Planner	Yes
<b>8</b>	Crossroads Institute	Oliver McBride	Executive Director	Yes
<b>9</b>	College of Natural Resources and Environment	Paul Winistorfer	Dean	Yes
<b>10</b>	Wytheville Community College	Charlie White	President	Yes
<b>11</b>	Virginia Department of Forestry	Zach Olinger	Forest Management and Educational Specialist	Yes
<b>12</b>				
<b>13</b>				
<b>14</b>				
<b>15</b>				
<b>16</b>				
<b>17</b>				
<b>18</b>				

## Partner Identification Form

### GOVERNOR'S CAREER AND TECHNICAL ACADEMY

**Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.**

**Partner School**

**Division/Institution/Organization:** Carroll County Public Schools

**Primary Contact**

**Name:** Dr. James Greg Smith

**Title:** Superintendent

**Address:** 605-9 Pine Street

Hillsville, VA 24343

**Telephone:** 276-728-3191      **Fax:** 276-728-3195

**E-Mail:** JGSMITH@ccpsd.k12.va.us

**Type of**

**Entity/Institution/Organization:** Educational

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Greg Smith

**Typed Name**  
Superintendent

**Position Title**

**Signature**

June 29, 2010

**Date**

## Partner Identification Form

### GOVERNOR'S CAREER AND TECHNICAL ACADEMY

**Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.**

**Partner School**

**Division/Institution/Organization:** Wytheville Community College

**Primary Contact**

**Name:** Dr. Charlie White

**Title:** President

**Address:** 1000 East Main Street

Wytheville, VA 24382

**Telephone:** 276-223-4848      **Fax:** 276-223-4770

**E-Mail:** wcwhite@wcc.vccs.edu

**Type of**

**Entity/Institution/Organization:** Educational

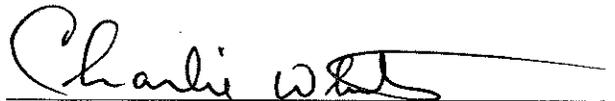
My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Charlie White

**Typed Name**

President

**Position Title**



**Signature**

June 29, 2010

**Date**

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

## Partner School

Division/Institution/Organization: College of Natural Resources  
and Environment

## Primary Contact

Name: PAUL WINISTORFER

Title: DEAN

Address: 324 Cheatham Hall  
Virginia Tech  
Blacksburg, VA 24061

Telephone: 540-231-5481 Fax: \_\_\_\_\_

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

## Type of

Entity/Institution/Organization: Higher Education

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

PAUL M. WINISTORFER

Typed Name

DEAN

Position Title

PAUL M. WINISTORFER

Signature

6/21/10

Date

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

## Partner School

Division/Institution/Organization: CROSSROADS INSTITUTE

## Primary Contact

Name: OLIVER A. MCBRIDE

Title: EXECUTIVE DIRECTOR

Address: 1117 E. STUART DRIVE

GALAX, VA 24333

Telephone: 276-236-0391 Fax: 276-236-0485

E-Mail: omcbride@crossroadsva.org

## Type of

Entity/Institution/Organization: Non-Profit

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

OLIVER A. MCBRIDE

Typed Name

EXECUTIVE DIRECTOR

Position Title

Oliver A. McBride

Signature

6-18-10

Date

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

## Partner School

Division/Institution/Organization: New River / Mount Rogers Workforce  
Investment Board/Area

## Primary Contact

Name: Marty Holliday

Title: Program Planner

Address: 6580 Valley Center Dr., Suite 119  
Radford VA 24141

Telephone: 540 357-0651 cell Fax: 540 633 2502

E-Mail: mhollday@nrvc.org

## Type of

Entity/Institution/Organization: Workforce

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Marty Holliday

Typed Name

Planner

Position Title

Marty Holliday

Signature

6/18/10

Date

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

Partner School

Division/Institution/Organization:

Chestnut Creek School  
of the Arts

Primary Contact

Name:

Chris Shackelford

Title:

Director

Address:

100 North Main Street  
Galaxy, VA 24333

Telephone:

270 ) 236 3500 Fax:

E-Mail:

Chris @ chestnutcreekarts.org

Type of

Entity/Institution/Organization:

Residential Crafts School

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Chris Shackelford

Typed Name

Director

Position Title

Chris Shackelford

Signature

6/18/10

Date

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

## Partner School

Division/Institution/Organization: Galax City Public Schools

## Primary Contact

Name: Rebecca Cardwell

Title: Assistant superintendent

Address: 223 Long St.

Galax, VA 24333

Telephone: 236-2911 Fax: 236-5776

E-Mail: rebeccacardwell@gcps.k12.va.us

## Type of

Entity/Institution/Organization: Public Schools

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Rebecca Cardwell  
Typed Name

Assistant Superintendent  
Position Title

Rebecca W. Cardwell  
Signature

6-18-10  
Date

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

## Partner School

Division/Institution/Organization: Grayson County Public Schools

## Primary Contact

Name: Karen Blevins

Title: Principal, CTE

Address: P.O. Box 707

110 Blue Devil Drive

Independence, VA 24348

Telephone: 276-773-2951 Fax: 276-773-2396

E-Mail: karen@grayson.k12.va.us

## Type of

Entity/Institution/Organization: public schools

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Karen H. Blevins

Typed Name

CTE Administrator

Position Title

Karen H. Blevins

Signature

6-18-10

Date

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

## Partner School

Division/Institution/Organization: Red Hill General Store

## Primary Contact

Name: Sarah Jo H. Jones

Title: Director of Marketing + Business Development

Address: 1035 Sylvatus Hwy  
Hillsville, VA 24343

Telephone: (276) 730-4324 Fax: (276) 728-5885

E-Mail: jones@redhillgeneralstore.com

## Type of

Entity/Institution/Organization: Retail / Agriculture / Renewable Energy / eCommerce

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Sarah Jo H. Jones

Typed Name

Director of Marketing + Business Dev.

Position Title

Sarah Jo H. Jones

Signature

June 18<sup>th</sup>, 2010

Date

## Partner Identification Form

## GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

## Partner School

Division/Institution/Organization:

Turman Sawmill, Inc.

## Primary Contact

Name:

John Michael Turman

Title:

President

Address:

P.O. Box 475

Hillsville, VA 24343

Telephone:

276-728-7974  
733-4534

Fax:

276-728-9133

E-Mail:

jerry@theturmangroup.com

## Type of

Entity/Institution/Organization:

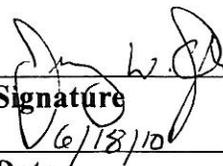
Turman Sawmill, Inc.

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Jeremy Oglet  
 Typed Name  
 Project Manager  
 Position Title

Signature

Date

  
 6/18/10

Partner Identification Form

GOVERNOR'S CAREER AND TECHNICAL ACADEMY

Include a Partnership Identification Form for each of the partner institutions/organizations participating in this proposal.

Partner School

Division/Institution/Organization: Virginia Department of Forestry

Primary Contact

Name: Zach Olinger

Title: Forest Management & Educational Specialist

Address: 106 Forestry Ln  
Galax, VA

Telephone: 276 236 2322 Fax: 276 236 4114

E-Mail: zachary.olinger@dof.virginia.gov

Type of

Entity/Institution/Organization: State Agency

My signature below certifies that my institution/organization agrees to be an active partner in planning and implementation of the proposed Governor's Career and Technical Academy outlined in the accompanying proposal:

Zach Olinger  
Typed Name  
Forest Management & Educational Specialist  
Position Title

Zach Olinger  
Signature  
8 Feb 11  
Date

## Advisory Committee

## Blue Ridge Crossroads Governor's Academy for Technical Education

<b>Partner</b>	<b>Representative</b>	<b>MOA Included</b>
Carroll County Public Schools	Mark A. Burnette	Yes
The Turman Group	Jeremy w. Ogle	Yes
Red Hill General Store	Thomas Largen	Yes
Grayson County Public Schools	Karen H. Blevins	Yes
Galax City Public Schools	Rebecca Cardwell	Yes
Chestnut Creek School of the Arts	Chris Shackelford	Yes
New River/Mt. Rogers Workforce Investment Board	Marty Holliday	Yes
Crossroads Institute	Oliver McBride	Yes
College of Natural Resources and Environment	Paul Winistorfer	To Be Determined
Wytheville Community College	Charlie White	Yes

**MEMORANDUM OF AGREEMENT  
BETWEEN  
PARTNER  
AND BLUE RIDGE CROSSROADS GOVERNOR'S ACADEMY FOR  
TECHNICAL EDUCATION (BRCGATE)**

**PARTNERS AND BLUE RIDGE CROSSROADS GOVERNOR'S ACADEMY FOR TECHNICAL EDUCATION (BRCGATE)** agrees to enter into this Agreement to support the Governor's Career and Technical Academy to broaden the scope of K-12 Science, Technology, Engineering, and Mathematic (STEM) educational experiences. Carroll County Public Schools (CCPSD) will serve as the lead partner for the Blue Ridge Crossroads Governor's Academy for Technical Education hereafter referred to as BRCGATE. CCPSD's role as lead partner will be to facilitate the vision, direction and implementation of BRCGATE.

**BRCGATE Vision:**

The **Blue Ridge Crossroads Governor's Academy for Technical Education (BRCGATE)** will help foster a progressive economy for the Twin Counties and the Commonwealth by creating a culture that educates and trains the future workforce of our rural community in emerging technologies that will allow us to compete in a global economy. The Academy will direct its initial focus on the STEM career clusters with the development of pathways in Pre-Engineering and Information Technologies, Agriculture, Food and Natural Resources, Architecture and Construction, and Scientific Research and Engineering. An additional focus will be to raise awareness, increase literacy, and provide opportunities for internships into STEM careers. The Technical Academy model will plan to expand into other STEM career areas such as robotics, modeling, simulation and animation, nanotechnology, biotechnology, renewable energy, and other fields of innovation, based upon the workforce needs of the region.

**MOA TIMEFRAME:**

The MEMORANDUM OF AGREEMENT period of performance Agreement shall be January 1, 2011 through June 30, 2012 and will be extended forward annually unless modified or terminated by a partner.

## **PARTNERS' AGREEMENTS:**

### **Carroll County Public Schools agrees to:**

- Serve as the governing body (Carroll County School Board) to reflect current Board of Education regulations relative to jointly operated school and programs as directed by the Department of Education and the Code of Virginia
- Serve as lead Agency and Fiscal Agent for the Academy to the Virginia Department of Education
- Coordinate and report all grant revenue and expenditure with the BRCGATE Advisory Council
- Provide leadership for developing and communicating the vision, direction and implementation of BRCGATE
- Assure that BRCGATE complies with all state standards for Governor's Career and Technical Academy as established by the Virginia Department of Education and The State Council of Higher Education for Virginia
- Establish and facilitate a BRCGATE Advisory Council with partners and sponsors
- Assume responsibility for BRCGATE program evaluation to include data collection, analysis and state reporting
- Provide Academy documentation and information as requested by the Department of Education
- Coordinate the development and distribution of recruitment and marketing materials
- Coordinate and monitor the implementation of the Academy Program of Studies
- Coordinate the implementation of staff development initiatives
- Provide for its share of operational costs, technology and space required for the BRCGATE Coordinator
- Coordinate all Academy initiatives with the divisional Superintendents and Career and Technical Directors
- Provide BRCGATE updates to the School Boards and Superintendents

**Twin County Public Schools:** Carroll County Public Schools, Grayson County Public Schools and Galax City Public Schools that enter the partnership agree to:

- Assure that resources are provided to implement Divisional approved BRCGATE programs
- Designate a key contact person to serve as liaison and active participant on the BRCGATE Advisory Council
- Provide school based leadership for the communication and implementation of Academy Programs as approved
- Provide counseling and other services that promote STEM education, career pathways, educational advancement and employment opportunities
- Market, recruit, select and enroll students for Academy Programs

- Implement strategies to recruit nontraditional and minority representation into BRCGATE initiatives
- Provide support and resources for Divisional approved programs and activities to be offered at Crossroads Institute
- Assure that all Divisional approved BRCGATE courses meet accreditation and DOE standards
- Assure that all faculty teaching Divisional approved BRCGATE courses meet DOE licensure requirements
- Assure that all Divisional approved BRCGATE courses, whereby students receive dual enrollment college credits, are aligned with content standards and faculty requirements as specified by the college credit granting agency
- Assure that Divisional approved BRCGATE curriculum represents well-articulated career pathways that meet the requirements for the Governor's Exemplary Standards Award Program, Commonwealth Scholars Course of Study, Workplace Readiness Skills for the Commonwealth, and Virginia Technical or Advanced Technical Diploma
- Provide or assure adequate staff development, support, and credentialing for faculty as required by BRCGATE courses
- Assure adequate IT hardware, software and technical support to instruction for Divisional approved BRCGATE courses, i.e., classroom, video, or web-based learning
- Provide a contact for the collection and reporting of data required for the BRCGATE assessment and evaluation

**Postsecondary Education Partners:** Wytheville Community College, Virginia Polytechnic Institute and State University and future partners agree to:

- Provide the resources, as agreed upon, to implement BRCGATE courses or activities that meet enrollment requirements
- Designate a key contact person to serve as liaison and active participant on the BRCGATE Advisory Council
- Provide organizational leadership for the communication and implementation of agreed upon Academy Programs within the participating schools
- Assure that all courses and faculty teaching BRCGATE courses meet accrediting standards
- Implement strategies to retain and provide a successful experience for nontraditional and minority BRCGATE students enrolled in courses and/or activities
- Assure that agreements with school divisions and other postsecondary educational entities regarding the earning and transfer of college credits or course work meets compliance requirements for all parties
- Provide for the staff development and release time to support training and credentialing for faculty as needed for BRCGATE within policies and budget
- Provide IT hardware, software and technical support to instruction as approved, whether that be classroom, video, or web-based learning

- Provide a contact person for the submission of demographic and instructional data for assessment and evaluation of BRCGATE as appropriate according to organizational policies

**Business Sponsors:** The Turman Group, Lowes Home Center, Red Hill General Store, Wyatt Carpenter Woodworking, and future partners agree to:

- Designate a key contact person to serve as liaison and active participant on the BRCGATE Advisory Council
- Provide resources, as agreed upon, to assist in the planning, delivery, or offering of BRCGATE Academy Programs
- Provide technical expertise to assure that the BRCGATE curriculum and instruction reflects industry standards and prepares students for the intended workforce
- Share BRCGATE information with other business leaders and recruit additional partners and sponsors
- Provide opportunities, as agreed upon, for BRCGATE students to receive real world experiences through internships, mentorships, and/or project-based learning
- Offer BRCGATE graduates access to employment opportunities within each organization as agreed upon
- Assist in procuring instructional and professional development resources

**Non-Profit Organizations and Local Governments:** New River/Mt. Rogers Council for Workforce Development, Crossroads Institute, Chestnut Creek School of the Arts, Virginia Cooperative Extension Office, Carroll County Board of Supervisors, City of Galax, Grayson County Board of Supervisors, agree to:

- Designate a key contact person to serve as liaison and active participant on the BRCGATE Advisory Council
- Provide resources, as agreed upon, to assist in the planning, delivery, or offering of BRCGATE Academy Programs
- Share BRCGATE information with other business leaders and organizations to recruit additional partners and sponsors
- Assist in developing and implementing strategies for the recruitment and enrollment of nontraditional and minority students as agreed upon
- Provide or assist in procuring instructional and professional development resources
- Provide organizational leadership for the communication and implementation of agreed upon Academy Programs

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

6/29/10  
Date

**PARTNER**

**Carroll County Public Schools**  
Partner Cluster (K-12)

  
\_\_\_\_\_  
Approving Signature

\_\_\_\_\_  
Superintendent  
Title

\_\_\_\_\_  
June 29, 2010  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

6/29/10  
Date

WgfhEvillo  
Community College  
Organization

Charlie White  
Approving Signature

President  
Title

6/29/10  
Date

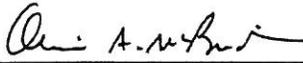
By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

6-21-10  
Date

CROSSROADS INSTITUTE  
Organization

  
Approving Signature

EXEC. DIRECTOR  
Title

6-21-10  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

June 22, 2010  
Date

New River / Mount Rogers  
Organization workforce Investment  
Board

Marty Holliday  
Approving Signature

Program Planner  
Title

June 22, 2010  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

June 21, 2010  
Date

Chestnut Creek School  
Organization of the Arts

Chim Shakerford  
Approving Signature

Director  
Title

6-21-10  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

June 21, 2010  
Date

Galax City Public Schools  
Organization

Rebecca Cardwell  
Approving Signature

Assistant Superintendent  
Title

June 21, 2010  
Date

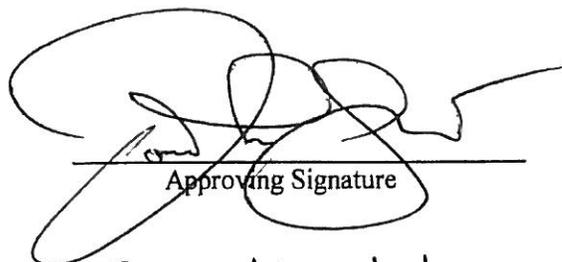
By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

7-1-10  
Date

Grayson Co.  
Organization

A large, stylized handwritten signature in black ink, written over a horizontal line. The signature is highly cursive and loops around itself.

Approving Signature

County Administrator  
Title

7-1-10  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

6-21-10  
Date

Grayson County Public Schools  
Organization

Karen A. Blawie  
Approving Signature

CTE Principal  
Title

6-21-10  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

6/21/10  
Date

Red Hill General Store  
Organization

  
Approving/Signature

President  
Title

6-21-2010  
Date

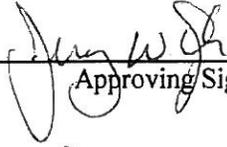
By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

6/21/10  
Date

The Turman Group  
Organization

  
Approving Signature

Project Manager  
Title

6/23/2010  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

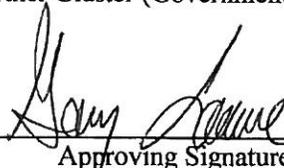
**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

7-9-2010

Date

**PARTNER**

**Carroll County  
Board of Supervisors  
Partner Cluster (Government)**

  
Approving Signature

County Administrator  
Title

7-9-2010  
Date

By signing this agreement both institutions agree to be active partners and agree to abide by this agreement.

**BLUE RIDGE CROSSROADS GOVERNOR'S  
ACADEMY FOR TECHNICAL EDUCATION**

**PARTNER**

20 Sep 10  
Date

Virginia Department of Forestry  
Organization

Zach Olmiger  
Approving Signature

Forest Management & Education Specialist  
Title

20 Sep 10  
Date

## Governor's Career and Technical 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 Career and Technical 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 for the Establishment of Governor's Career and Technical Academies* document.
3. If the Governor's Career and Technical 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 Career and Technical Academy, and that the applicant will comply with the statement of assurances.

Dr. James G. Smith

Superintendent

Typed or Printed Name of Authorized Official

Title

Signature of Authorized Official

Date



*Virginia Governor's*  
**CAREER & TECHNICAL EDUCATION**  
**EXEMPLARY STANDARDS AWARDS PROGRAM**

**2010-2011 Nomination Form due June 30, 2010**

We have a Career and Technical Education program that we want to be considered for a Governor's Award for CTE Exemplary Standards. We have reviewed the Governor's Career and Technical Education Exemplary Standards and believe our program qualifies. We understand that documentation must be posted to a Web site by February 11, 2011.

School	Carroll County High School	
Division	Carroll County Public Schools	
Program	Building Trades	
Contact Information:	Mark Burnette	
Phone (276)730-3217	FAX (276)730-3210	E-mail maburnet@ccpsd.k12.va.us
Briefly describe the program and why you think it is exemplary:		
<p>The Building Trades program at Carroll County High School is a two year sequential program with a third year option. In addition to teaching the competencies required by the Virginia Department of Education and the standards of the National Center for Construction Education and Research (NCCER), the program performs many projects both at the school and in the community. Projects have included the following: construction of a decorative retaining wall at the front of the school and at a veteran's memorial, remodeling of the stadium press box and entryway, modification of a school bus into a 21<sup>st</sup> century learning lab, renovations of storage areas within the school into classrooms, storage building projects for other schools and patrons from the community, construction of a staging area for modular housing construction, and participation in the development of a partnership with the Fuller Center housing project just to list a few.</p> <p>Through an agreement with Wytheville Community College students have the opportunity to earn 21 dual college credits while enrolled in the secondary program toward a post-secondary Construction Technology Diploma. Students are introduced to "Green Careers" through training in the design and installation of solar photocell and passive water heating technology. Students enrolled in the program also participate in the NCCER industry certification program.</p>		
Signatures: (Please print or type and sign)		
Teacher: Rusty Warren	Vance Leggett	
Principal: Dr. Scott Watson		
Division CTE Administrator: Dr. Mark A. Burnette		
Division Superintendent: Dr. James G. Smith		
Date: June 1, 2010		

Mail to: Virginia Career Education Foundation  
2002 Bremo Road, Lower Level  
Richmond, VA 23226

Or Fax to: 804-545-0577

# Appendix J

## Virginia School Board Association Property and Casualty Pool

### Renewal Cover Page to Member Agreement

Member Number:		VSBA 10-076
Name of Member:		Carroll County School Board
Coverage Period:	Effective Date:	July 1, 2010
	Expiration Date:	July 1, 2011

#### I. Coverages and Limits of Liability

- |     |   |   |
|-----|---|---|
| [X] | Automobile Liability                          |   |
|     | Each Occurrence Limit                         | \$1,000,000 Combined Single Limit                         |
|     | Uninsured Motorists                           | \$1,000,000 Combined Single Limit                         |
|     | Automobile Medical Payments                   | \$5,000   |
| [X] | Automobile Physical Damage                    |   |
|     | Comprehensive/Collision                       | Actual Cash Value or Cost of Repair,<br>whichever is less |
| [X] | General Liability                             |   |
|     | Each Occurrence Limit                         | \$1,000,000   |
|     | Personal & Advertising Injury Limit           | \$1,000,000   |
|     | Fire Damage (Any One Fire)                    | \$300,000   |
|     | Medical Expense Limit                         | \$10,000  |
|     | General Aggregate Limit                       | \$2,000,000   |
|     | Products/Completed Operations Aggregate Limit | \$2,000,000   |
| [X] | School Leaders Errors and Omissions Liability |   |
|     | Limit of Liability                            | \$1,000,000   |
|     | Aggregate                                     | \$1,000,000   |
| [X] | Excess Liability                              |   |
|     | Limit of Coverage                             | \$2,000,000   |
| [X] | Property and Inland Marine                    |   |
|     | Limit of Coverage                             | Per Schedule  |
| [X] | Fidelity Coverage                             |   |
|     | Each Occurrence Limit                         | \$250,000   |
| [X] | Equipment Breakdown Coverage                  |   |
|     | Limit of Coverage                             | \$10,000,000  |

## Appendix J

### II. Deductibles

Automobile Liability	\$0
Automobile Physical Damage	\$500
General Liability	\$0
School Leaders Errors & Omissions	\$0
Property/Inland Marine	\$1,000
Fidelity	\$250
Equipment Breakdown	\$1,000

### III. Excess Insurance

#### Liability:

The Pool maintains reinsurance coverage up to the limit of liability coverage shown above in excess of the Pool's \$100,000 per occurrence retention.

#### Property/Inland:

The Pool maintains reinsurance coverage up to \$200,000,000 per occurrence in excess of the Pool's \$100,000 per occurrence retention.

#### Equipment Breakdown:

The Pool maintains reinsurance coverage up to \$10,000,000 per occurrence in excess of the Pool's \$0 per occurrence retention.

### IV. Contribution, Assessment

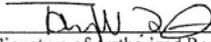
\$117,721.00 due July 1, 2010. See Declaration Pages attached to Coverage Forms for contributions by individual coverage lines. The contribution was determined based on actuarially approved rates. In the event of a deficit in the Pool's fund, additional assessments as provided in the Member Agreement may be imposed by the Member Supervisory Board.

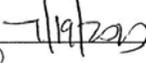
### V. Servicing Company

PMA Management Corp except for Equipment Breakdown coverage serviced by CNA.

### IV. Virginia Insurance Guaranty Association

A local government group self-insurance pool is not protected by the Virginia Insurance Guaranty Association against default due to insolvency. In the event of insolvency, members and persons filing claims against members may be unable to collect any amount owed to them by the Group regardless of the terms of the member agreement. In the event the Group is in a deficit position, a member may be liable for any and all unpaid claims against such member.

  
\_\_\_\_\_  
(Signature of Authorized Representative)

  
\_\_\_\_\_  
(Date)

VSBA PROPERTY AND CASUALTY POOL  
COMMON POLICY DECLARATIONS

INSURED                      Carroll County School Board  
MAILING ADDRESS          605-9 Pine Street  
   Hillsville, VA 24343  
  
POLICY PERIOD              07/01/2010 TO 07/01/2011  
   12:01 A.M. Standard Time at mailing address shown above  
  
BUSINESS DESCRIPTION    School District

IN RETURN FOR THE PAYMENT OF THE PREMIUM, AND SUBJECT TO ALL THE TERMS OF THIS POLICY, WE AGREE WITH YOU TO PROVIDE THE INSURANCE AS STATED IN THIS POLICY.

THIS POLICY CONSISTS OF THE FOLLOWING COVERAGE PARTS FOR WHICH A PREMIUM IS INDICATED. THIS PREMIUM MAY BE SUBJECT TO ADJUSTMENT.

	CONTRIBUTION
Automobile Coverage	\$ 34,466.00
General Liability Coverage	\$ 4,197.00
School Leaders Legal Liability Coverage	\$ 5,643.00
Excess Liability Coverage	\$ 10,719.00
Property and Inland Marine Coverage	\$ 54,627.00
Fidelity Coverage	\$ 800.00
Equipment Breakdown Coverage	\$ 7,429.00
TOTAL	\$117,721.00

Premium shown is payable at inception

Forms applicable to all Coverage Parts: See Schedule of Forms and Endorsements IL 12 01 11 85 A

COUNTERSIGNED July 13, 2010 BY Paul Blumit  
(Date) (Authorized Representative)

**GOVERNOR'S CAREER AND TECHNICAL ACADEMY**  
**ESTIMATED BUDGET**  
**2011-2012**

<b>A. Direct Costs</b>	<b>TOTAL</b>			
	<b>State Funds</b>	<b>Perkins Funds</b>	<b>Other Funds (Describe Source in Budget Narrative)</b>	<b>In-Kind</b>
1. Personnel---1000			Requested Workforce Development Grant Funds Agriculture professor and researcher \$74,000.00 Secretary \$22,000.00	Full and Part-time instructors, part-time director, part-time bus drivers  \$506,524.00
2. Employee Benefits---2000			Requested Workforce Development Funds \$24,106.00	\$127,188.00
3. Purchased/Contractual Services---3000				Software subscription fees, server hosting, etc..., Dual Credit Supplements \$12,126.00
4. Internal Services---4000				Bus transportation for 3 school divisions \$65,852.00
5. Staff Development---5000		Continued professional development for staff \$7000.00	Requested Workforce Development Funds Professional Development for Instructors, Admin., etc... \$16,000.00	Participation in professional organization meetings and conferences \$4000.00
6. Summer Component Activities---5000			Requested Workforce Development Funds Summer Campus Visits, mini camps, etc... \$9000.00	Summer programs \$3000.00
7. Travel --- 5000		Travel for Prof. De Meetings, Bus travel, etc...	Requested Workforce Development Funds Travel for Prof. Dev., Meetings, Bus travel, etc...	Travel for Prof. Dev. Meetings, Bus travel, etc... \$11,000.00
		\$9000.00	\$9000.00	

	Industry Certification testing			Existing subscription fees for software training modules, Utilities
8. Contractual Services---5000	\$6000.00			\$5500.00
9. Materials and Supplies---6000			Requested Workforce Development Funds Marketing and Classroom material \$12,000.00	Classroom and lab materials \$12,000.00
10. Equipment---8000	New lab equipment \$15,000.00	New lab equipment \$50,000.00	Requested Workforce Development Funds \$90,000.00	New and existing computers and percentage of lab equipment \$50,000.00
11. Facilities---8000				Facility rental at Crossroads \$29,056.00
<b>B. Indirect Costs</b>				None
<b>Total</b>	\$21,000.00	\$66,000.00	\$256,106.00	\$826,246.00

**\*If recovering indirect costs, the rate must not exceed the federally approved indirect cost rate of the fiscal agent.**

# **Attachments**

**Attachment A – Career Pathway: Engineering and Technology/Pre-engineering**

**Attachment B – Career Pathway: Network Systems**

**Attachment C - Career Pathway: Programming and Software Development**

**Attachment D – Career Pathway: Construction**

**Attachment E – Career Pathway: Design/Pre-Construction**

**Attachment F – Career Pathways: Food Products and Processing Systems, Animal Systems, Power, Structural & Technical Systems**

**Attachment G – Career Pathway: Natural Resource Systems**



**Career Cluster:** Science, Technology, Engineering, and Mathematics

**Career Pathway:** Engineering and Technol/Pre-engineering

**Community College Major:** General Engineering Technology

**Related Industry Certifications Available:** See list below

**Additional Learning Opportunities:** Skills USA

**Work-Based Learning:** Career Research, Internship

	Grade	English	Math	Science	S.S.	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>		
<b>Middle School</b>	<b>7</b>	English 7	Math 7, Math 8	Life Science	Civics and Economics	Exploratory – Keyboarding, Career Investigation I	Health/P.E. *	Fine Arts **
	<b>8</b>	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding	Health/P.E. *	Foreign Language Level I**, Fine Arts, CTE Elective

**CAREER ASSESSMENT:** Administration of a VA Wizard or another career assessment and interest inventory is provided at both the middle school and secondary level.

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	<b>Required Courses or Recommended Electives** and/or CTE Courses</b>			<b>Related Careers and Industry Certifications</b>
<b>SECONDARY</b> <i>Career Coaching,</i>	<b>9</b>	English 9	Algebra I, or Geometry	Earth Science	World History II	Health/P.E.* Foreign Language Level I or II**	Industrial Occupational Exploration**	Fine Arts** Elective	Engineer, Engineering Assistant Mechanical Engineer or Engineering Technician Manufacturing Engineer or Engineering Technician Industrial Engineer or Engineering Technician Quality Control Engineer or Technician Material Testing Technician Technical Salesperson ■ NOCTI Pre-engineering Assessment
	<b>10</b>	English 10 or English 10 Honors	Algebra II or Geometry	Biology I	World Geography (elective)	Health/P.E.* Foreign Language Level II or III**	Exploring Entrepreneurship	Intro to Computer Applications DC	
	<b>11</b>	English 11 or English 11 Honors	Algebra II or Advanced Algebra or equivalent	Chemistry or AP Chemistry (	United States and Virginia History	Advanced Math** Economics and Personal Finance*	Introduction to Engineering (MEC 101) Crossroads Institute	Entrepreneurship DC	
	<b>12</b>	English 12, English 12 Honors/AP or English 111/112	Advanced Algebra or equivalent	Physics or Principles of Technology I & II	United States and Virginia Government	Pre-Calculus** DC or Applied Calculus ** DC	Advanced Engineering (MEC 102) Crossroads Institute	Career Applications III (Internship)	

Postsecondary Placement Assessments ( <i>Reading, Writing, &amp; Math</i> )										
<b>POSTSECONDARY</b> <b>Community College</b> <i>Career Placement</i>	<b>Year 1 1<sup>st</sup> Semester</b>	College Composition ENG 111	Tech. Math MTH115 or MTH 163		Social / Behavioral Science Elective	Mech Drafting I DRF 114	Humanities Elective	College Success Skills SDV 100		
	<b>Year 1 2<sup>nd</sup> Semester</b>		Tech Math MTH116 or MTH 164			Machine Lab I MAC 131	Intro to Computer Applications AST 232 if not taken in H.S.	EGR 140 Engineering Mechanics- Statics	Computer Aided Drafting and Design II DRF 202	
	<b>Year 2 1<sup>st</sup> Semester</b>			Applied Physics I PHY 101 or Physics I PHY 201	Health/P.E. Elective	Engineering Metallurgy and Materials EGR 249	Mechanics of Materials EGR 246	Statistical Quality Control IND 235	Technical Elective	
	<b>Year 2 2<sup>nd</sup> Semester</b>			Applied Physics II PHY 102 or Physics II PHY 202	Social/ Behavioral Science Elective	Mechanics III Dynamics for Engineering Tech. MEC 133	Thermodynamics MEC 255	Health/ P.E. Elective	Mechanics of Materials Laboratory EGR 247	
<b>4-year</b> Institution	University/College:					<b>Key</b>	<b>Required Course</b>			Academic Dual Enrollment
	Degree or Major:						Dual Credit course (HS to CC)			
	Number of dual enrollment CC Credits:						Dual enrollment course: CC to 4-yr			

<sup>1</sup>Standard Diploma Requirements: <http://www.doe.virginia.gov/instruction/graduation/standard/shtml>

Advanced Studies Diploma Requirements: [http://www.doe.virginia.gov/instruction/graduation/advanced\\_studies/shtml](http://www.doe.virginia.gov/instruction/graduation/advanced_studies/shtml)



Attachment B



**Career Cluster:** Information Technology  
**Career Pathway:** Network Systems  
**Community College Major:** Networking Systems

**Additional Learning Opportunities:** Skills USA  
 Technology

**Work-Based Learning:** Career Research, Internship

**Related Industry Certifications Available:** See list below

	Grade	English	Math	Science	S.S.	*Required Courses or Recommended Electives** and/or CTE Courses		
						Middle School	7	English 7
8	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding		Health/P.E. *	Foreign Language Level I**, Fine Arts, CTE Elective

**CAREER ASSESSMENT:** Administration of a VA Wizard or another career assessment and interest inventory is provided at both the middle school and secondary level.

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	*Required Courses or Recommended Electives** and/or CTE Courses			Related Careers and Industry Certifications
						SECONDARY Career Coaching,	9	English 9	
10	English 10 or English 10 Honors	Algebra II or Geometry	Biology	World Geography (Elective)	Health/P.E.* Foreign Language Level III**		Exploring Entrepreneurship	Computer Applications or Computer Info. Systems DC	
11	English 11 or English 11 Honors	Algebra II or Advanced Algebra or equivalent	Chemistry or AP Chemistry (	United States and Virginia History	Advanced Math** Economics and Personal Finance*		Computer Networking Hardware Operations I and II DC	Entrepreneurship Education DC	
12	English 12, English 12 Honors/AP or English 111/112	Advanced Algebra or equivalent	Physics or Principles of Technology I & II	United States and Virginia Government	Pre-Calculus ** DC or DC Applied Calculus		Computer Networking Hardware Operations III and IV DC	Career Integration (Internship)	

Postsecondary Placement Assessments ( <i>Reading, Writing, &amp; Math</i> )									
<b>POSTSECONDARY</b> Community College <i>Career Placement</i>	<b>Year 1 1<sup>st</sup> Semester</b>	College Composition ENG 111				Intro. To Business BUS 100	Intro. to Information Systems ITE 100	College Success Skills SDV 100	Intro to Computer Applications AST 232 (if not taken in H.S.)
	<b>Year 1 2<sup>nd</sup> Semester</b>	Intro to Speech Communication s PD 110		Health/P.E. Elective		Web Page Design ITD 110		Java Programming ITP 120	
	<b>Year 2 1<sup>st</sup> Semester</b>		Mathematics for Liberal Arts MTH 151		Social / Behavioral Science Elective			System Analysis and Design ITP 251	Java Data Structures and Algorithms ITP 200
	<b>Year 2 2<sup>nd</sup> Semester</b>				Social/ Behavioral Science Elective		LAN Administration ITM 195	Humanities Elective	Internship or Co-op ITE 290
<b>4-year</b> Institution	University/College:					<b>Key</b>	Required Course		Academic Dual Enrollment
	Degree or Major:						Dual Credit course (HS to CC)		
	Number of dual enrollment CC Credits:						Dual enrollment course: CC to 4-yr		

<sup>1</sup>Standard Diploma Requirements: <http://www.doe.virginia.gov/instruction/graduation/standard.shtml>

Advanced Studies Diploma Requirements: [http://www.doe.virginia.gov/instruction/graduation/advanced\\_studies.shtml](http://www.doe.virginia.gov/instruction/graduation/advanced_studies.shtml)



**Career Cluster:** Information Technology  
**Career Pathway:** Programming and Software Development  
**Community College Major:** Information Systems Technology  
**Related Industry Certifications Available:** See list below

**Additional Learning Opportunities:** Skills USA  
**Work-Based Learning:** Career Research, Internship

	Grade	English	Math	Science	S.S.	*Required Courses or Recommended Electives** and/or CTE Courses		
						Middle School	7	English 7
8	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding		Health/P.E. *	Foreign Language Level I**, Fine Arts, CTE Elective

**CAREER ASSESSMENT:** Administration of VA Wizard or another career assessment and interest inventory is provided at both the middle school and secondary level.

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	Required Courses or Recommended Electives** and/or CTE Courses			Related Careers and Industry Certifications
						SECONDARY Career Coaching,	9	English 9	
10	English 10 or English 10 Honors	Algebra II or Geometry	Biology	World Geography (Elective)	Health/P.E.* Foreign Language Level II or III**		Computer Systems Technology I	Computer Info. Systems DC	
11	English 11 or English 11 Honors	Algebra II or Advanced Algebra or equivalent	Chemistry or AP Chemistry	United States and Virginia History	Computer Math DC Economics and Personal Finance*		Computer Systems Technology II DC Database Design and Management DC	Entrepreneurship DC  Design, Multimedia, and Web Technologies DC	
12	English 12, or English 12 Honors/AP or English 111 or 112	Advanced Algebra or equivalent	Physics or Principles of Technology I & II	United States and Virginia Government	Pre-Calculus ** DC DC Applied Calculus		Computer Systems Technology III DC Advanced Database Design and Management DC	Career Applications III (Internship)  College Psychology** DC	

Postsecondary Placement Assessments (Reading, Writing, & Mathematics )									
<b>POSTSECONDARY</b> <b>Community College</b> <i>Career Placement</i>	<b>Year 1 1<sup>st</sup> Semester</b>	College Composition Eng 111			Social/ Behavioral Science Elective	Intro. To Business BUS 100	Introduction to Computer Applications and Concepts ITE 115	College Success Skills SDV 100	Intro to Computer Application AST 232 (if not taken in H.S.) Survey of Internet Services ITE 131
	<b>Year 1 2<sup>nd</sup> Semester</b>	Intro. to Speech Communication SPD 110		Health/P.E. Elective		Web Page Design II ITD 210	Computer Aided Modeling and Rendering DRF 238	Java Programming ITP 120	Networking Fundamentals CISCO ITN 154 (if not taken in H.S.) Software Design ITP 100
	<b>Year 2 1<sup>st</sup> Semester</b>		Mathematics for Liberal Arts MTH 151 or College Algebra MTH 158 or Pre-Calculus MTH 163				C+ Programming I ITP 136	Introductory Routing – CISCO ITN 155	Java Data Structures and Algorithms ITP 200
	<b>Year 2 2<sup>nd</sup> Semester</b>				Principles of Macroeconomics ECO 201	Advanced Computer Applications and Integration ITE 215	Administration of Network Resources ITN 200	Humanities Elective C+ Programming II ITP 236	Internship or Co-op ITE 290
<b>4-year</b> <i>Institution</i>	University/College:					<b>Key</b>	Required Course		Academic Dual Enrollment
	Degree or Major:						Dual Credit course (HS to CC)		
	Number of dual enrollment CC Credits:						Dual enrollment course: CC to 4-yr		

<sup>1</sup>Standard Diploma Requirements: <http://www.doe.virginia.gov/instruction/graduation/standard.shtml>

Advanced Studies Diploma Requirements: [http://www.doe.virginia.gov/instruction/graduation/advanced\\_studies.shtml](http://www.doe.virginia.gov/instruction/graduation/advanced_studies.shtml)



**Additional Learning Opportunities:** Skills USA  
**Work-Based Learning:** Career Research, Service Learning Projects, Internship, Apprenticeship

**Career Cluster:** Architecture and Construction  
**Career Pathway:** Construction  
**Related Industry Certifications Available:** NCCER Core

	Grade	English	Math	Science	S.S.	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>		
<b>Middle School</b>	<b>7</b>	English 7	Math 7, Math 8	Life Science	Civics and Economics	Exploratory-Keyboarding, Career Investigation I	Health/P.E.*	Fine Arts**
	<b>8</b>	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding	Health/P.E.*	Foreign Language Level I**, CTE or Fine Arts Elective

**CAREER ASSESSMENT:** Administration of a career assessment instrument (VA Wizard) is provided in the Career Interpretation Phase II class to help students and their parents plan for high school. The VA Wizard career assessment is also given in 10<sup>th</sup> grade.

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	<b>*Required Courses or **Recommended Electives and/or CTE Courses</b>			<b>Related Careers and Industry Certifications</b>
<b>SECONDARY</b> <i>Career Coaching,</i>	<b>9</b>	English 9	Algebra I, or Geometry	Earth Science	World History II	Health/P.E.* Foreign Language** Level I or II**	CTE or Fine Arts Elective	CTE or Fine Arts Elective	Concrete Finisher Masonry Helper Masonry Apprentice Carpenter's Helper Carpenter Electrical Helper Journey Electrician Master Electrician Plumber's Helper Journey Plumber Master Plumber Contractor/Builder Building Materials Sales Green Energy Installer
	<b>10</b>	English 10 or English 10 Honors	Algebra II or Geometry	Biology	World Geography (Elective)	Building Trades I-A DC	Building Trades I-B DC	Foreign Language II or III	
	<b>11</b>	English 11 or English II Honors	Algebra II or Advanced Algebra or equivalent	Chemistry or AP Chemistry	United States and Virginia History	Building Trades II DC Economics and Personal Finance*	Building Trades II DC	Foreign Language III	
	<b>12</b>	English 12 or English 12 Honors/AP or English 111 and 112	Advanced Algebra or equivalent	Physics or Principles of Technology I & II	United States and Virginia Government	Building Trades III DC	Building Trades III DC	Career Application III Elective	

### Carpentry Concentration

Postsecondary Placement Assessments ( <i>Reading, Writing, &amp; Mathematics</i> )									
<b>POSTSECONDARY</b> Community College <i>Career Placement</i>	<b>Year 1 1<sup>st</sup> Semester</b>		Basic Tech Math 1 MTH 103			College Success Skills SDV 100	Building Construction Mgmt. BLD 101	Intro to Computer App. & Concepts – AST 232	
	<b>Year 1 2<sup>nd</sup> Semester</b>	Blueprint Reading BLD III					Communicati on Processes I ENG 137	Basic Carpentry Principles BLD 126	
	<b>Year 2 1<sup>st</sup> Semester</b>		Construction Estimating BLD 231			Computer Aided Drafting DRF 231	Carpentry Framing I BLD 131	The House as a System BLD 240	BLD 197 If Career Application not completed in H.S.
	<b>Year 2 2<sup>nd</sup> Semester</b>					Carpentry Framing II BLD 132	Carpentry Framing III BLD 133	Cooperative Education BLD 297	
<b>4-year Institution</b>	University/College:					<b>Key</b>	Required Course		Academic Dual Enrollment
Degree or Major:					Dual Credit course (HS to CC)				
Number of dual enrollment CC Credits:					Dual enrollment course: CC to 4-yr				

<sup>1</sup>Standard Diploma Requirements: <http://www.doe.virginia.gov/instruction/graduation/standard.shtml>

Advanced Studies Diploma Requirements: [http://www.doe.virginia.gov/instruction/graduation/advanced\\_studies.shtml](http://www.doe.virginia.gov/instruction/graduation/advanced_studies.shtml)

## Electrical Concentration

Postsecondary Placement Assessments ( <i>Reading, Writing, &amp; Mathematics</i> )									
<b>POSTSECONDARY</b> Community College <i>Career Placement</i>	<b>Year 1 1<sup>st</sup> Semester</b>		Basic Tech Math MTH 103				Construction Mgmt. BLD 101	Intro to Computer App. & Concepts AST 232	College Success Skills SDV 100
	<b>Year 1 2<sup>nd</sup> Semester</b>	Blueprint Reading BLD 111					Communicati on Processes 1 ENG 137	Commercial Wiring Methods ELE 173	
	<b>Year 2 1<sup>st</sup> Semester</b>		Construction Estimating BLD 231			The House as a System BLD 240	Computer Aided Drafting DRF 231	BLD 197 in Career App. if not taken in H.S.	Industrial Wiring ELE 245
	<b>Year 2 2<sup>nd</sup> Semester</b>		Principles of Plumbing Trades BLD 140				National Electric Code ELE 131	Cooperative Education BLD 297	
<b>4-year</b> Institution	University/College:					<b>Key</b>	Required Course		Academic Dual Enrollment
Degree or Major:					Dual Credit course (HS to CC)				
Number of dual enrollment CC Credits:					Dual enrollment course: CC to 4-yr				

<sup>1</sup>Standard Diploma Requirements: <http://www.doe.virginia.gov/instruction/graduation/shtml>

Advanced Studies Diploma Requirements: [http://www.doe.virginia.gov/instruction/graduation/advanced\\_studies.shtml](http://www.doe.virginia.gov/instruction/graduation/advanced_studies.shtml)

## Plumbing Concentration

Postsecondary Placement Assessments ( <i>Reading, Writing, &amp; Mathematics</i> )									
<b>POSTSECONDARY Community College Career Placement</b>	<b>Year 1 1<sup>st</sup> Semester</b>		Technical Math MTH 103				Intro to Computer App & Concepts AST 232	Construction Mgmt. BLD 101	College Success Skills SDV 100
	<b>Year 1 2<sup>nd</sup> Semester</b>	Blueprint Reading and Building Code BLD 111					Communication Processes I ENG 137	Carpentry Principles BLD 126	Principles Plumbing I BLD 140
	<b>Year 2 1<sup>st</sup> Semester</b>				Principles Plumbing II BLD 141	Principles Plumbing III BLD 142	Cooperative Education BLD 197	Construction Estimating BLD 231	House as a System BLD 240
	<b>Year 2 2<sup>nd</sup> Semester</b>	Plumbing & Blueprint Read BLD 143					Plumbing Code & Certification Prep. BLD 144	Cooperative Education BLD 297	Computer Aided Drafting DRF 231
<b>4-year Institution</b>	University/College:					<b>Key</b>	Required Course		Academic Dual Enrollment
	Degree or Major:						Dual Credit course (HS to CC)		
	Number of dual enrollment CC Credits:						Dual enrollment course: CC to 4-yr		

<sup>1</sup>Standard Diploma Requirements: <http://www.doe.virginia.gov/instruction/graduation/standard.shtml>

Advanced Studies Diploma Requirements: [http://www.doe.virginia.gov/instruction/graduation/advanced\\_studies.shtml](http://www.doe.virginia.gov/instruction/graduation/advanced_studies.shtml)



Attachment E



**Additional Learning Opportunities:** Skills USA

**Career Cluster:** Architecture and Construction

**Career Pathway:** Design/Pre-Construction

**Related Industry Certifications Available:** CAD Assessment (NOCTI)

Drafting and Design Assessment (NOCTI)

**Work-Based Learning:** Career Research, Service Learning Projects, Internship

	Grade	English	Math	Science	S.S.	Required Courses or Recommended Electives and/or CTE Courses		
<b>Middle School</b>	<b>7</b>	English 7	Math 7, Math 8	Life Science	Civics and Economics	Exploratory – Keyboarding, Career Investigation I	Health/P.E. *	Fine Arts **
	<b>8</b>	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding	Health/P.E. *	Foreign Language Level **, CTE or Fine Arts Elective

**CAREER ASSESSMENT:** Administration of a career assessment instrument is appropriate at the middle school level to help students and their parents plan for high school (VA Wizard® or other assessment product).

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	Required Courses or Recommended Electives and/or CTE Courses			Related Careers
<b>SECONDARY</b> <i>Career Coaching,</i>	<b>9</b>	English 9	Algebra I, or Geometry	Earth Science	World History II	Health/PE* Foreign Language Level I or II**	Keyboarding Computer Applications**	Elective	<ul style="list-style-type: none"> <li>• CAD Specialist</li> <li>• Computer-Aided Drafter</li> <li>• Designer</li> <li>• Drafter</li> <li>• Drafting Supervisor</li> <li>• Electrical Drafter</li> <li>• Electronic Drafter</li> <li>• Fixture Design Drafter</li> <li>• Machine Design Drafter</li> <li>• 3D Solid Modeling</li> </ul>
	<b>10</b>	English 10 or English 10 Honors	Algebra II or Geometry	Biology	World Geography (elective)	Health/PE* Foreign Language Level II or III**	Industrial Occup. Expl: Drafting/Electronics	Elective	
	<b>11</b>	English 11 or English 11 Honors	Algebra II, or Advanced Algebra or equivalent	Chemistry	United States and Virginia History	Drafting I DC Economics and Personal Finance*	Intro to Computer Applications ** DC	Elective	
	<b>12</b>	English 12, or English 12 Honors/AP or English 111 and 112	Advanced Algebra or equivalent	Physics or Principles of Technology I & II	United States and Virginia Government	Drafting II DC	Career Applications III	Elective	

Postsecondary Placement Assessments ( <i>Reading, Writing, &amp; Mathematics</i> )									
<b>POSTSECONDARY</b> Community College <i>Career Placement</i>	<b>Year 1</b> <b>1<sup>st</sup></b> <b>Semester</b>		Technical Math I (MTH 115) or MTH 151 or MTH 163			Intro to Graphic Representation DRF 120	Intro to Computer Applications AST 232	Machine Lab I MAC 131	Preparation for Employment (SDV 106)
	<b>Year 1</b> <b>2<sup>nd</sup></b> <b>Semester</b>		Descriptive Geometry for Drafting (DRF 136)	Computer – Aided Drafting & Design I (DRF 201)	Computer-Aided Machining (DRF 226)	Machine and Processes (IND 113)	Machine Lab II (MAC 132)	Social Science Elective	Health or PE
	<b>Year 2</b> <b>1<sup>st</sup></b> <b>Semester</b>	English 111 or 112 If not taken in H.S. ENG 115		Fundamentals of Architectural Drafting (DRF 155)		Computer Aided Drafting & Design II (DRF 202)	Parametric Solid Modeling I (DRF 241)	Mechanics I (MEC 131)	Oral Interpretation (SPD 137)
	<b>Year 2</b> <b>2<sup>nd</sup></b> <b>Semester</b>		Computer-Aided Modeling & Rendering I (DRF 238)	Parametric Solid Modeling II (DRF 242)	Soc Science Elective	Computer Aided Drafting & Design III (DRF 203)	Design Capstone Project (DRF 280)	Health or PE	Parametric Solid Modeling II (DRF 243)
<b>4-year</b> Institution	University/College:					<b>Key</b>	<b>Required Course</b>		Academic Dual Enrollment
	Degree or Major:						Dual Credit course (HS to CC)		
	Number of dual enrollment CC Credits:						Dual enrollment course: CC to 4-yr		

<sup>1</sup>Standard Diploma Requirements: <http://www.doe.virginia.gov/instruction/graduation/standard.shtml>

Advanced Studies Diploma Requirements: [http://www.doe.virginia.gov/instruction/graduation/advanced\\_studies.shtml](http://www.doe.virginia.gov/instruction/graduation/advanced_studies.shtml)



**Career Cluster:** Agriculture, Food, and Natural Resources

**Career Pathways:** Food Products and Processing Systems, Animal Systems

**Work-Based Learning:** Career Research, Service Learning Projects, Internship

**Related Industry Certifications Available:**

**Additional Learning Opportunities:** FFA

See below

	Grade	English	Math	Science	S.S.	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>		
<b>Middle School</b>	<b>7</b>	English 7	Math 7, Math 8	Life Science	Civics and Economics	Exploratory-Keyboarding, Career Investigation I	Health/P.E.*	Fine Arts**
	<b>8</b>	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding	Health/P.E.*	Foreign Language Level I**, Agriscience Technology 8004

**CAREER ASSESSMENT:** Administration of a career assessment instrument (VA Wizard) is provided in the Career Interpretation Phase II class to help students and their parents plan for high school. The VA Wizard career assessment is also given in 10<sup>th</sup> grade.

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>			Related Careers
<b>SECONDARY</b> <i>Career Coaching,</i>	<b>9</b>	English 9	Algebra I, or Geometry	Earth Science	World History II	Health/P.E.* Foreign Language Level I or II**	Introduction to Animal Systems 8008 and/or Foundations of Agriculture 8006	CTE or Fine Arts Elective	<ul style="list-style-type: none"> <li>• Farm Worker</li> <li>• Farm Manager</li> <li>• Veterinary Assistant</li> <li>• Veterinarian</li> <li>• Biochemist</li> <li>• Food Scientist</li> <li>• Food Packaging Processor</li> </ul>
	<b>10</b>	English 10 or English 10 Honors	Algebra II, , or Geometry	Biology	World Geography (Elective)	Foreign Language Level II or III**	Agriculture Production Technology 8010 or Applied Agricultural Concepts 8073	CTE or Fine Arts Elective	<p><b>Related Certifications</b></p> <ul style="list-style-type: none"> <li>• Outdoor Power Equipment Certification</li> <li>• Agriculture Mechanics Assessment NOCTI</li> <li>• Commercial Pesticide Applicator Assessment</li> <li>• Production Agriculture Assessment NOCTI</li> </ul>
	<b>11</b>	English 11 or English 11 Honors	Algebra II, Advanced Algebra or equivalent	Chemistry	United States and Virginia History	Agriculture Production Management 8012 (Production Track)	Veterinary Science 8088 DC (Animal Systems Track)	Economics and Personal Finance* Entrepreneurship Education 9093	
	<b>12</b>	English 12 or English 12 Honors/AP or English 111 and 112	Advanced Algebra or equivalent	Physics or Principles of Technology	United States and Virginia Government	Biotechnology Foundations 8085 DC	Biotechnology Applications in Agriculture 8087 DC	CTE or Other Elective Career Applications III (Internship) 9072	

<b>POST SECONDARY</b>	<b>SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY</b>			
	<b>Pathway</b>	<b>Associate Degree, College Certificate, or Apprenticeship</b>	<b>Bachelors Degree</b>	<b>Postgraduate Degree</b>
	<b>Food Products and Processing Systems, Animal Systems</b>	<b>AS&amp;S Agriculture Science Specialization</b>	<b>Animal and Poultry Science, Food Science and Technology</b>	

**College: Wytheville Community College**

**School Division(s): Carroll, Grayson, Galax**

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

<b>POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP</b>	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 1 <sup>st</sup> Semester		MTH 163 Pre-calculus I	BIO 101 General Biology I	ECO 201 Principles of Macroeconomics	SDV 100 College Success Skills			
	Year 1 2 <sup>nd</sup> Semester	ENG 112 College Composition II	MTH 271 Applied Calculus I	BIO 102 General Biology II	ECO 202 Principles of Microeconomics	AGR Elective  Biological Applications In Agriculture 8086 DE			
	Year 2 1 <sup>st</sup> Semester	ENG 241 or 243 Survey of American Lit. I Survey of English Lit. I		CHM 111 College Chemistry I	GEO 220 World Regional Geography	AGR Elective  Biotechnology Foundations 8085 DE	CST 110 Introduction to Speech Communications		
Year 2 2 <sup>nd</sup> Semester	ENG 242 or 244 Survey of American Lit. II Survey of English Lit. II		CHM 112 College Chemistry II		AGR Elective Biotechnology Applications in Agriculture 8087 DE	HLT/PED Elective	HUM Humanities Elective		
<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:**

**Additional Suggested Learning Opportunities:**

**Work-Based Learning:**

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

<b>UNIVERSITY</b>	University/College: <b>Virginia Polytechnic Institute</b> Degree or Major: Number of dual enrollment CC Credits:
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**Career Cluster:** Agriculture, Food, and Natural Resources

**Career Pathway:** Power, Structural & Technical Systems

**Additional Learning Opportunities:** FFA

**Related Industry Certifications**

**Work-Based Learning:** Career Research, Service Learning Projects, Internship

**Available:** See below

	Grade	English	Math	Science	S.S.	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>		
<b>Middle School</b>	<b>7</b>	English 7	Math 7, Math 8	Life Science	Civics and Economics	Exploratory-Keyboarding, Career Investigation I	Health/P.E.*	Fine Arts**
	<b>8</b>	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding	Health/P.E.*	Foreign Language Level I**, Agriscience Technology 8004

**CAREER ASSESSMENT:** Administration of a career assessment instrument (VA Wizard) is provided in the Career Interpretation Phase II class to help students and their parents plan for high school. The VA Wizard career assessment is also given in 10<sup>th</sup> grade.

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>			Related Careers
<b>SECONDARY Career Coaching,</b>	<b>9</b>	English 9	Algebra I, or Geometry	Earth Science	World History II	Health/P.E.* Foreign Language Level I or II**	Agriculture Mechanics and Basic Animal Science 8008 and/or Foundations of Agriculture 8006	CTE or Fine Arts Elective	<ul style="list-style-type: none"> <li>• Farm Worker</li> <li>• Farm Manager</li> <li>• Outdoor Power Equipment Operator</li> <li>• Farm Equipment Mechanic</li> <li>• Farm Maintenance</li> <li>• Metal Fabricator</li> </ul>
	<b>10</b>	English 10 or English 10 Honors	Algebra II or Geometry	Biology	World Geography (Elective)	Foreign Language Level II or III**	Agriculture Production Technology 8010 or Applied Agricultural Concepts 8073	CTE or Fine Arts Elective	<p><b>Related Certifications</b></p> <ul style="list-style-type: none"> <li>• Outdoor Power Equipment Certification</li> <li>• Agriculture Mechanics Assessment NOCTI</li> <li>• Commercial Pesticide Applicator Assessment</li> <li>• Production Agriculture Assessment NOCTI</li> </ul>
	<b>11</b>	English 11 or English 11 Honors	Algebra II, or Advanced Algebra or equivalent	Chemistry	United States and Virginia History	Introduction to Power, Structural and Technical Systems 8016	CTE or Fine Arts Elective	Economics and Personal Finance*	
	<b>12</b>	English 12 or English 12 Honors/AP or English 111 and 112	Advanced Algebra or equivalent	Physics or Principles of Technology I & II	United States and Virginia Government	Agriculture or other CTE Elective	Agriculture Fabrication and Emerging Technologies 8019 DC	CTE or Other Elective Career Applications III Internship 9072	



**Career Cluster:** Agriculture, Food, and Natural Resources

**Career Pathway:** Natural Resources Systems

**Additional Learning Opportunities:** FFA

**Related Industry Certifications Available:** Forestry Products and Processing

**Work-Based Learning:** Career Research, Service Learning Project, Internship

- NOCTI, Commercial Pesticide Applicator Certification

	Grade	English	Math	Science	S.S.	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>		
<b>Middle School</b>	<b>7</b>	English 7	Math 7, Math 8	Life Science	Civics and Economics	Exploratory-Keyboarding, Career Investigation I	Health/P.E.*	Fine Arts**
	<b>8</b>	English 8 English 8 A/B	Math 8, or Algebra I	Physical Science	World History I	Career Interpretation II*, Keyboarding	Health/P.E.*	Foreign Language Level I**, Agriscience Technology 8004

**CAREER ASSESSMENT:** Administration of a career assessment instrument (VA Wizard) is provided in the Career Interpretation Phase II class to help students and their parents plan for high school. The VA Wizard career assessment is also given in 10<sup>th</sup> grade.

	Grade	English <sup>1</sup>	Math <sup>1</sup>	Science <sup>1</sup>	S.S. <sup>1</sup>	<b>*Required Courses or Recommended Electives** and/or CTE Courses</b>			<b>Related Careers</b>
<b>SECONDARY Career Coaching,</b>	<b>9</b>	English 9	Algebra I, Geometry	Earth Science	World History II	Health/P.E.* Foreign Language Level I or II**	Foundations of Agriculture 8006 and/or Agriculture Mechanics and Basic Animal Science 8008	Technology Laboratory** or Fine Arts Elective**	Game Warden Park Ranger Parks & Recreation Worker Maintenance Worker Lumber Grader Conservationist Equipment Operator Environmentalist
	<b>10</b>	English 10 or English 10 Honors	Algebra II or Geometry	Biology	World Geography (Elective)	Health/P.E.* Intro to Natural Resources and Ecology Systems* 8040	Keyboarding /Computer Applications**  Foreign Language Level II or III**	CTE or Fine Arts Elective**	
	<b>11</b>	English 11 or English 11 Honors	Algebra II, or Advanced Algebra or equivalent	Chemistry y	United States and Virginia History	Forestry Management 8042 FOR 105 DC Biotechnology Foundations 8085 DC	Computer Applications**	Economics and Personal Finance*	
	<b>12</b>	English 12 or English 12 Honors/AP or English 111 and 112	Advanced Algebra or equivalent	Physics or Principles of Technology I & II	United States and Virginia Government	Advanced Forestry Management 8044	Career Applications III Internship 9072**	Entrepreneurship Education 9093 or Other CTE Elective	

POST SECONDARY	SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY			
	Pathway	Associate Degree, College Certificate, or Apprenticeship	Bachelors Degree	Postgraduate Degree
	Natural Resources Systems	AS&S Agriculture Science Specialization	Natural Resource Conservation Wood Science and Forest Products	

College: Wytheville Community College

School Division(s): Carroll, Grayson, Galax

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

POSTSECONDARY - COMMUNITY COLLEGE OF APPRENTICESHIP	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 1 <sup>st</sup> Semester	ENG 111 College Composition I	MTH 163 Pre-calculus I	BIO 101 General Biology I	ECO 201 Principles of Macroeconomics	SDV 100 College Success Skills	AGR Elective Forestry Management 8042 FOR 105 DC		
	Year 1 2 <sup>nd</sup> Semester	ENG 112 College Composition II	MTH 271 Applied Calculus I	BIO 102 General Biology II	ECO 202 Principles of Microeconomics	AGR Elective Biological Applications In Agriculture 8086 DE			
	Year 2 1 <sup>st</sup> Semester	ENG 241 or 243 Survey of American Lit. I Survey of English Lit. I		CHM 111 College Chemistry I	GEO 220 World Regional Geography	AGR Elective Biotechnology Foundations 8085 DE	CST 110 Introduction to Speech Communications		
Year 2 2 <sup>nd</sup> Semester	ENG 242 or 244 Survey of American Lit. II Survey of English Lit. II		CHM 112 College Chemistry II		AGR Elective Biotechnology Applications in Agriculture 8087 DE	HLT/PED Elective	HUM Humanities Elective		

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: **Virginia Polytechnic Institute**

Degree or Major:

Number of dual enrollment courses: \_\_\_\_\_

