Virginia Board of Education Agenda Item

Agenda Item: B **Date:** May 23, 2013

Title	Final Review of Proposal to Establish the Pulaski County Public Schools Governor's STEM Academy		
Presenter	Ms. Lolita B. Hall, Director, Office of Career and Technical Education Services		
E-mail	lb.hall@doe.virginia.gov	**Phone**	(804) 225-2051

Purpose of Presentation:
Other initiative or requirement. Specify below:
Final review of the Proposal to Establish the Pulaski County Public Schools Governor's STEM Academy

Previous Review or Action:
Previous review and action. Specify date and action taken below:
Date: April 25, 2013
Action: First Review

Action Requested:
Final review: Action requested at this meeting.

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

x	Goal 1: Accountability for Student Learning
	Goal 2: Rigorous Standards to Promote College and Career Readiness
x	Goal 3: Expanded Opportunities to Learn
	Goal 4: Nurturing Young Learners
	Goal 5: Highly Qualified and Effective Educators
	Goal 6: Sound Policies for Student Success
	Goal 7: Safe and Secure Schools
	Other Priority or Initiative. Specify:

Background Information and Statutory Authority:
Goal 1: The Academy must meet rigorous criteria established by the Board of Education. Students progress in academic and technical knowledge and skills; and their employability knowledge and skills are monitored and measured annually to ensure successful transition to college and career.

Goal 3: The Governor's STEM Academy is designed to expand opportunities for the general student population to acquire STEM literacy and other critical skills, knowledge, and credentials that will prepare them for high-demand, high-wage and high-skill careers.

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

As required by the Board of Education, the State Council of Higher Education for Virginia (SCHEV) has reviewed the attached proposal and recommends that the Board approve the proposal. Staff members of the Virginia Department of Education (DOE) have reviewed the proposal in the context of the Board's criteria. An executive summary of the proposal is in Attachment A. Attachment B is the report from the review by SCHEV and Attachment C is the report from the review by the VDOE. Attachment D is the complete proposal.

Currently, there are 18 Governor's STEM Academies in Virginia. They are located in Arlington County, Carroll County, Chesapeake City, Chesterfield County, Fairfax County, Halifax County, Hampton City, Loudoun County, Lynchburg City, New Kent County, Newport News City, Richmond City, Richmond County, Roanoke County, Russell County, Stafford County, Suffolk City, and Virginia Beach City.

Summary of Important Issues:

The proposal for the Pulaski County Governor's STEM Academy *Pathways to Success* outlines a program that will provide rigorous academic content concentrating on three career pathways: Construction, Production, and Engineering and Technology. Student learning and achievement will be enhanced through the integration of core academics, a STEM-focused curriculum, applied technology, and increased participation in career and technical student organization leadership events. The Academy is a partnership between Pulaski County Public Schools, Pulaski County Chamber of Commerce, Pulaski County Community Development, Pulaski County Board of Supervisors, New River Community College, Virginia Tech, Caterpillar, OWPR Inc., Appalachian Machine Incorporated, Habitat for Humanity New River Valley, BAE Systems, and Joint Services for Pulaski County. The overall goals of the Pulaski County Governor's STEM Academy are to provide students with 21st century, STEM-enriched technological skills and the knowledge necessary to succeed in postsecondary education and in the world of work. Courses in engineering, electricity, and welding will help prepare students in Pulaski County Public Schools to meet the rigorous work force demands of STEM careers.

The Academy will focus on the following three career pathways within three career clusters:

CAREER CLUSTER	CAREER PATHWAY
Architecture and Construction	**Construction**
Manufacturing	**Production**
Science, Technology, Engineering, and Mathematics (STEM)	**Engineering and Technology**

Pulaski County High School students selecting the **Construction** pathway will have the opportunity to earn dual enrollment credits in the core academic areas as well as in electricity. The Virginia Employment Commission's *Community Profile for Pulaski County* lists construction in its top-five projections for long-term industrial employment for Pulaski County. Students completing this pathway can pursue an Associate of Applied Science Degree in Electrical Engineering Technology or an

Associate of Applied Science Degree in Electronics Technology. Completion of these programs will also give students a head start on earning their electrical journeyman license, master electrician license, or contractor license.

Pulaski County High School students selecting the **Production** pathway will have the opportunity to earn dual enrollment credits in the core academic areas as well as in welding. Local business and industry leaders have confirmed that this pathway meets both the present and future work force needs of Pulaski County in high-wage, high-skill fields. Pulaski County High School students completing this pathway can pursue a certificate in welding. The certificate program will include welder qualification and certification with the American Society of Mechanical Engineers (ASME) Welding and Brazing Qualification and the American Welding Society (AWS).

Pulaski County High School students selecting the **Engineering and Technology** pathway will have the opportunity to earn dual enrollment credits in the core academic areas as well as in drafting and refrigeration and air conditioning. The Virginia Employment Commission's *Community Profile for Pulaski County* lists heating, air-conditioning, and refrigeration mechanics and installers as growth occupations for Pulaski County. It also lists professional, scientific, and technical services in its top-five projections for long-term industrial employment for Pulaski County. Students completing this pathway can pursue engineering degrees at a four-year postsecondary institution or an Associate of Arts and Sciences Degree in Engineering at New River Community College.

Pulaski County High School students in all three pathways may take Advanced Placement courses at Pulaski County High School to earn college credit. By taking advantage of course offerings at Pulaski County High School, the Pulaski County Governor's STEM Academy, and classes through New River Community College, students could earn an associate degree while in high school. All students will be eligible for industry certifications pertinent to their selected pathway, as well as the Workplace Readiness Skills for the Commonwealth examination.

In summary, the Pulaski County Governor's STEM Academy will provide students with 21st century, STEM-enriched technological skills and the knowledge necessary to succeed in postsecondary education and in the world of work. This will be accomplished through authentic, rigorous, project-based work while building partnerships with parents and community and business leaders to meet these goals.

Impact on Fiscal and Human Resources:
Funding for implementation must be provided at the local level.

Timetable for Further Review/Action:
The proposed beginning date for the Pulaski County Public Schools Governor's STEM Academy is school year 2013-14.

Superintendent's Recommendation:
The Superintendent of Public Instruction recommends that the Board of Education approve the proposal to establish the Pulaski County Public Schools Governor's STEM Academy.

Pulaski County Public Schools
Governor's STEM Academy

Executive Summary
April 7, 2013

Partnership Members:	Pulaski County Public Schools, Pulaski County Chamber of Commerce, Pulaski County Community Development, Pulaski County Board of Supervisors, New River Community College, Virginia Tech, Caterpillar, OWPR Inc., Appalachian Machine Inc. Habitat for Humanity New River Valley, BAE Systems, and Joint Services for Pulaski County
Lead Entity and Fiscal Agent:	Pulaski County Public Schools
Contact Person:	Ross Matney CTE Director Assistant Principal Pulaski County High School 5414 Cougar Trail Road Dublin, VA 24084 Phone: 540-643-0596 Fax: 540-674-4722
Academy Location:	Pulaski High School
Number Students:	The Governor's STEM Academy will have the capacity to enroll 263 students, grades 9 – 12. During the initial school year (2013–2014) 83 students will be admitted.
Career Pathways:	Construction Engineering and Technology Production
Academy Goals and Performance Measures:	The goal of the Pulaski County Public Schools Governor's STEM Academy is to promote student achievement and interest in STEM career fields to prepare students for global competitiveness in high-skill, high-wage, and high-demand STEM careers. The following program objectives and performance measures have been established by the Planning/Advisory Committee: • Increase the percentage of Governor's STEM Academy students taking Algebra II by four percent over the next four years. • Increase the percentage of Governor's STEM Academy students scoring pass/advanced on mathematics and science end-of-course Standards of

Learning tests by four percent over the next four years.

- Increase the number of postsecondary credits earned though dual enrollment, Advanced Placement courses, and the Jumpstart program by five percent over the next four years.
- Provide annually, one hundred percent of the Governor's STEM Academy students with workplace readiness experiences, through strong partnerships with local businesses.
- Increase the graduation rate for Pulaski County High School by four percent over the next four years.
- Reduce the dropout rate for Pulaski County High School by two percent over the next four years.
- Increase enrollment and retention in postsecondary education by giving Governor's STEM Academy students the opportunity to earn dual enrollment credit (see bullet number three above) and by providing at least three opportunities annually for Governor's STEM Academy students and their parents to learn about postsecondary opportunities available at New River Community College and other postsecondary institutions. After high school, Governor's STEM Academy students will complete the Career and Technical Education follow-up survey to determine successful enrollment and retention in postsecondary institutions.
- Increase the number of students completing a college and career readiness curriculum in high school by increasing enrollment and completion rates in Pulaski County Governor's STEM Academy courses by five percent annually.
- Reduce the number of students requiring remediation in college by five percent annually. The Pulaski County Governor's STEM Academy director will work with the career coach at Pulaski County High School and New River Community College to obtain the results for Pulaski County Schools from the Virginia Placement Test to determine both baseline data and successful attainment of the performance measure. It does need to be noted that after disaggregating testing, discipline, and attendance data, the administrative and curriculum teams at Pulaski County High School have recommended a change to the scheduling procedure for rising ninth graders. The new schedule will allow more time to focus on core academic areas, especially Algebra I. This change should provide the students with a firmer academic foundation and make the transition to high school easier, which will hopefully decrease the need for postsecondary remediation and help to increase the graduation rate.
- Increase the number of industry certifications awarded to Governor's STEM Academy students by five percent over the next four years.
- Increase the number of Governor's STEM Academy graduates employed in high-wage, high-demand, and high-skill careers as determined by the Virginia Employment Commission by five percent over the next five years. The attainment of the measure will be determined by data provided by the Career and Technical Education follow-up survey and data provided by New River Community College.

Highlights of the Program:

As a result of participating in the Governor's STEM Academy in the pathways of Construction, Engineering and Technology and Production, students will:

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

The State Council of Higher Education for Virginia

Review of Governor's STEM Academy Proposal

Name of Lead Entity on Proposal: *Pulaski County Public Schools*

Date of Review: May 8, 2013

The State Council of Higher Education for Virginia recommends approval of: *Governor's STEM Academy at Pulaski County High Schools*

Peter Blake
Director

5/8/13
Date

Attachment C

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

Title of Proposal: Pulaski County Public Schools Governor's STEM Academy

Lead Entity for Proposal: Pulaski Public Schools

Date of Review: April 5, 2013

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

I. Partnership Capacity

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

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

Criteria	Documentation			Comments
	Full	Partial	None	
D. A statement of assurances that the Governor's STEM Academy Planning Committee has reviewed provisions of *Administrative Procedures Guide for the Establishment of Governor's STEM Academies* 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 STEM Academy shall provide the Department of Education with evidence of the following:

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

III. Program Description

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

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

Criteria	Documentation			Comments
	Full	Partial	None	
1. Rigorous academic content in career and technical instruction;	X			
2. An emphasis on STEM career pathways;	X			
3. Individualized high school plans to ensure course selections that are aligned with students' transition and career goals after high school;	X			
4. Evidence that graduates will complete a college and work readiness curriculum, minimally at the level specified for Commonwealth Scholars Course of Study (State Scholars Core) with the possibility of pre-approved substitution of equivalent courses where there may be more relevant course selections for a particular career pathway;	X			
5. 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			

Criteria	Documentation			Comments
	Full	Partial	None	
2. Increase completion of dual enrollment courses;	X			
3. Provide workplace readiness experiences for students through strong partnerships with businesses;	X			
4. Increase high school graduation rates;	X			
5. Reduce dropout rates;	X			
6. Increase enrollment and retention in postsecondary education;	X			
7. Increase the proportion of students completing a college and workplace ready curriculum in high school;	X			
8. Reduce the proportion of students requiring remediation in college;	X			
9. Increase the number of industry certifications awarded to high school students; and	X			
10. Increase the number of graduates employed in high-wage, high-demand and high-skill careers.	X			
Comments:				

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

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

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

	Documentation			Comments
	Full	Partial	None	
	X			.
Comments:				

E. Program and course descriptions

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

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

Criteria	Documentation			Comments
	Full	Partial	None	
Pathway #2				
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, or	X			
c. Must address regional and local work force demand in a high-wage, high-skill field as identified by employers and work force officials.	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			

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

Criteria	Documentation			Comments
	Full	Partial	None	
a. Earn one or more industry certifications or state occupational licenses, and/or demonstrate competencies on an assessment instrument recognized by postsecondary institutions such as CLEP examinations, collaboratively designed or mutually approved end-of-course tests, college placement tests, or student portfolios reviewed by a team of college and high school faculty; **or**	X			
b. Earn at least 9 transferable college credits as defined in the Early College Scholars program (includes dual enrollment, AP and other options); **or**	X			
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				
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.				
Comments:				

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

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

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments: .				

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

IV. Administrative Procedures

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

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

B. Student recruitment, selection criteria, and admissions.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

C. Code of student conduct and attendance.

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

H. Parent, student and community involvement

Criteria	Documentation			Comments
	Full	Partial	None	
1. Preparation for entering the Academies should begin by eighth grade.	X			

Criteria	Documentation			Comments
	Full	Partial	None	
2. Students, parents, teachers, and counselors should work collaboratively to: a. Complete career interest inventories;	X			
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				
Comments:				

ATTACHMENT D

Pathways to Success: A Proposal to Establish a Governor's STEM Academy in Pulaski County Public Schools

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Rationale

Why is a Governor's STEM Academy so important to Pulaski County Public Schools? Before answering this question, a little background information about Pulaski County is essential.

Pulaski County is located in the heart of the New River Valley, with the New River, Claytor Lake, and the Blue Ridge Mountains serving as a backdrop. Like many areas of Southwest Virginia, Pulaski County has a rich heritage based on both agricultural and manufacturing opportunities. A visitor to the town of Pulaski during the 1970s would have heard the hum of looms and sewing machines in the textile mills and the sound of saws and the smell of finishes coming from the furniture plants. According to the "History of Pulaski County," the residents of the county were known for their honesty and willingness to work hard. Pulaski County High School graduates could choose to go to college, but many entered the work force and joined their parents and relatives in the local furniture factories or textile mills. These students would start at entry-level positions and work their way up the line. Just as their parents did before them, they would work for the company from high school until retirement and would make a good living.

Today, Pulaski County is quite different. The economic downturn that began in the 1990s hit Pulaski County very hard. Like many of its neighboring counties, Pulaski County lost its furniture factories and textile mills as the parent companies moved their factories to Mexico and Asia. Pulaski County has faced population decline and higher unemployment rates. Through hard work and perseverance, the county has attracted new employers such as Volvo, Fontaine Modifications, James Hardie, Caterpillar, Phoenix Packaging, and Appalachian Machine. Each of these companies has brought new job opportunities to Pulaski County; however, these companies have also made it very clear that their employees must have a specific skill set that encompasses industry certification and/or a two-year or four-year college degree. They want their employees to be complex problem solvers, good communicators, and effective researchers who have the ability to find and filter information. STEM academy pathways provide the opportunities for students to begin to develop these skills and to have a head start on industry certifications and/or two-year or four-year degrees. STEM programs also build important relationships with local companies.

Knowing these facts makes it much easier to answer the question stated at the beginning of this introduction. A Governor's STEM Academy would offer students at Pulaski County High School additional career pathways in occupations that are projected to increase by 17 percent by 2018. Workers in STEM occupations earn 26 percent more than non-STEM workers and enjoy more career flexibility. The Virginia Employment Commission projects that Pulaski County's top-five growth industries by 2018 will be construction; professional, scientific, and technical services; administrative and support and waste management; health care and social assistance; and arts, entertainment, and recreation. According to the Virginia Employment Commission's *Long Term Industry and Occupational Projections, 2008-2018* and *Occupational Employment Statistics (OES) Survey, 2010,* heating, air conditioning, and refrigeration mechanics and installers will be one of the growth occupations in Pulaski County. Most importantly, discussions with local business and industry leaders, the Chamber of Commerce, the New River Valley

Economic Development Alliance, and New River Community College confirmed that there was a need for a Governor's STEM Academy and that the chosen pathways were right on target for present and future employment needs in Pulaski County. In conclusion, the STEM pathways would produce a skilled work force that would help attract new industry to Pulaski County.

By creating a Governor's STEM Academy, Pulaski County Public Schools expect to raise student aspirations and attract more students to postsecondary education in preparation for the career pathways of Engineering and Technology, Production, and Construction. Our goal is to provide well-trained workers to support the recruiting of new businesses and industries to the Commonwealth and to meet the work force needs of existing businesses and industry.

Partnership Capacity

Planning/Advisory Committee

Dr. Thomas Brewster, superintendent of Pulaski County Public Schools, provided the initial vision and guidance for the formation of a Governor's STEM Academy. The Planning/Advisory Committee for the Pulaski County Governor's STEM Academy was organized in the fall of 2012 and was charged with the task of taking Dr. Brewster's initial vision and forging it into a partnership between the school system, New River Community College, the local business community, and local government and nongovernment agencies. The Pulaski County Governor's STEM Academy Planning/Advisory Committee has identified the Science, Technology, Engineering & Mathematics; Architecture & Construction; and Manufacturing Career Clusters as the initial Academy focus. The courses in welding, electricity, and engineering will help prepare students in Pulaski County Public Schools to meet the rigorous work force demands of STEM careers. The Planning/Advisory Committee has met frequently since its formation in order to fulfill both Dr. Brewster's directives and to meet the guidance directives for the creation of a Governor's STEM Academy as outlined by the Virginia Department of Education (VDOE). The Pulaski County Governor's STEM Academy director will be responsible for the facilitation, coordination, and/or implementation of the Planning/Advisory Committee recommendations.

Planning/Advisory Committee Members for the Governor's STEM Academy

Name	Affiliation	Title
Dr. Thomas Brewster	Pulaski County Public Schools	Superintendent
Dr. Greg Brown	Pulaski County Public Schools	Assistant Superintendent
Ron Nichols	Pulaski County Public Schools	Director of Operations, Transportation & Maintenance
Chris Stafford	Pulaski County Public Schools	Director of Finance
Debbie Hodges	Pulaski County Public Schools	Coordinator of Instructional Technology and Academic Support

Joseph Guthrie	Pulaski County Public Schools	School Board Member
Mike Myers	Pulaski County High School	Principal
Ross Matney	Pulaski County High School	Assistant Principal and CTE Director
Mary Cheverton	Pulaski County High School	CTE Guidance Counselor
Dan Lookadoo	New River Community College	Dean of Business and Technologies
Peter Anderson	New River Community College	HITE Grant Administrator
Deborah Kennedy	New River Community College	Enrollment Management and Career Pathways Coordinator
Peggy White	Pulaski County Chamber of Commerce	Executive Director
Shawn Utt	Pulaski County	Director of Community Development

(See Appendix D—Pulaski County Governor's STEM Academy Planning/Advisory Committee Agreements)

Memorandum of Agreement (MOA)

A written Memorandum of Agreement (MOA) outlining the responsibilities for each partner group as well as the Pulaski County Governor's STEM Academy will be signed by all current and future partners. (See Appendix I—Partnership Capacity/Memorandum of Agreement)

Coordination

The Career and Technical Education Center director for Pulaski County High School will serve as the Pulaski County Governor's STEM Academy director. This position will report to the Planning/Advisory Committee and will be supervised by the principal of the high school. The Pulaski County Governor's STEM Academy director will also serve as the liaison to local businesses and to New River Community College. The superintendent has appointed a liaison from the Central Office to work with the Academy director.

STEM Academy Director Responsibilities

The Pulaski County Governor's STEM Academy director will be responsible for the coordination of the design, implementation, and evaluation processes of the Pulaski County Governor's STEM Academy.

Responsibilities of the Pulaski County Governor's STEM Academy director will include, but are not limited to, the following:

- Facilitate the meetings of the Pulaski County Governor's STEM Academy Planning/Advisory Committee.
- Serve as a primary contact to the Virginia Department of Education.
- Coordinate the student application and selection process for the Academy.
- Serve as the liaison with New River Community College in the development and oversight of dual-enrollment courses.
- Promote business and industry participation and support of the Academy.
- Plan Academy staff development activities and coordinate with divisional staff development activities.
- Prepare and monitor the budget related to the Academy, provide information requested by the VDOE, submit state reports, and manage program data and demographics.

Statement of Assurances

The Planning/Advisory Committee has reviewed the provisions of the *Administrative Procedures Guide for the Establishment of Governor's Academy STEM Academies* and agrees to follow the guidelines set forth in the document. (See Appendix K—Statement of Assurances).

The fiscal agent for The Pulaski County Governor's STEM Academy will be Pulaski County Public Schools.

Program Description

Program Goals

The Pulaski County Governor's STEM Academy will provide rigorous academic content concentrating on three career pathways: Engineering and Technology, Production, and Construction. Student learning and achievement will be enhanced through the integration of core academics, a STEM-focused curriculum, applied technology, and increased participation in career and technical student organization leadership events.

The overall goals of the Pulaski County Governor's STEM Academy are to provide students with 21st century, STEM-enriched technological skills and the knowledge necessary to succeed in postsecondary education and in the world of work. This will be accomplished through authentic, rigorous, project-based work while building partnerships with parents and community and business leaders to meet these goals.

The Pulaski County Governor's STEM Academy is designed to give students in grades nine through twelve the opportunity to explore several career paths while incorporating Virginia's Workplace Readiness Skills for the Commonwealth. Career pathways prepare students for programs leading to bachelor's degrees, two-year associate degrees, apprenticeships, and employment.

The following goals for students at the Governor's STEM Academy have been established by the Planning/Advisory Committee:

- Gain a deeper understanding of the skills and knowledge incorporated in their pathways of study.
- Benefit from specialized, project-based courses which develop critical thinking, problem solving, and decision-making skills in order to prepare them for the 21st century world of work.
- Acquire greater communication skills.
- Develop workplace readiness skills.
- Accept opportunities to earn industry certifications and/or apply to advanced training schools or postsecondary education which will allow them to be more competitive in the work force.
- Increase the number of nontraditional completers.
- Obtain meaningful, real-life, hands-on experiences in their career pathway.
- Profit from opportunities for internships, mentorships, and partnership activities, which provide students with advantages when entering postsecondary education and/or the workplace.

Students may complete a study of the following courses in the Pulaski County Governor's STEM Academy: Welding I, Welding II-Dual Enrollment, Welding III-Dual Enrollment, Electricity I, Electricity II, Electricity III-Dual Enrollment, Drafting I, Drafting II, Drafting III-Dual Enrollment, Technology Foundations, Materials and Processes Technology, Engineering Explorations, Engineering Analysis and Applications II, and Refrigeration & Air Conditioning at New River Community College.

Students will have the opportunity to earn industry certifications in the following pathways:

Career Pathways	Industry Certifications
Engineering and Technology	• Workplace Readiness Skills for the Commonwealth • Refrigeration and Air Conditioning Certificate through New River Community College. • SkillsUSA
Architecture and Construction	• Workplace Readiness Skills for the

	Commonwealth • SkillsUSA
Manufacturing	• Workplace Readiness Skills for the Commonwealth • American Welding Society (AWS) certifications to become an entry-level welder. • SkillsUSA

Program Objectives and Performance Measures

One of the major goals of the most recent updates to the English, mathematics, and science Standards of Learning is to increase the rigor of the standards and the expectations to better prepare students to compete in today's global economy and to meet national and international benchmarks for college and career readiness.

The following program objectives and performance measures have been established by the Planning/Advisory Committee:

- Increase the percentage of Governor's STEM Academy students taking Algebra II by four percent over the next four years.
- Increase the percentage of Governor's STEM Academy students scoring pass/advanced on mathematics and science end-of-course Standards of Learning tests by four percent over the next four years.
- Increase the number of postsecondary credits earned through dual enrollment, Advanced Placement courses, and the Jumpstart program by five percent over the next four years.
- Provide annually, one hundred percent of the Governor's STEM Academy students with workplace readiness experiences, through strong partnerships with local businesses.
- Increase the graduation rate for Pulaski County High School by four percent over the next four years.
- Reduce the dropout rate for Pulaski County High School by two percent over the next four years.
- Increase enrollment and retention in postsecondary education by giving Governor's STEM Academy students the opportunity to earn dual enrollment credit (see bullet number three above) and by providing at least three opportunities annually for Governor's STEM Academy students and their parents to learn about postsecondary opportunities available at New River Community College and other postsecondary institutions. After high school, Governor's STEM Academy students will complete the Career and Technical Education follow-up survey to determine successful enrollment and retention in postsecondary institutions.
- Increase the number of students completing a college and career readiness curriculum in high school by increasing enrollment and completion rates in Pulaski County Governor's STEM Academy courses by five percent annually.

- Reduce the number of students requiring remediation in college by five percent annually. The Pulaski County Governor's STEM Academy director will work with the career coach at Pulaski County High School and New River Community College to obtain the results for Pulaski County Schools from the Virginia Placement Test to determine both baseline data and successful attainment of the performance measure. It does need to be noted that after disaggregating testing, discipline, and attendance data, the administrative and curriculum teams at Pulaski County High School have recommended a change to the scheduling procedure for rising ninth graders. The new schedule will allow more time to focus on core academic areas, especially Algebra I. This change should provide the students with a firmer academic foundation and make the transition to high school easier, which will hopefully decrease the need for postsecondary remediation and help to increase the graduation rate.
- Increase the number of industry certifications awarded to Governor's STEM Academy students by five percent over the next four years.
- Increase the number of Governor's STEM Academy graduates employed in high-wage, high-demand, and high-skill careers as determined by the Virginia Employment Commission by five percent over the next five years. The attainment of the measure will be determined by data provided by the Career and Technical Education follow-up survey and data provided by New River Community College.

Baseline Data

The charts listed below show baseline student data from Pulaski County High School in Algebra II enrollment, pass/advanced percentages on mathematics and science end-of-course Standards of Learning tests, industry certifications, postsecondary credits, workplace readiness experiences, and graduation and dropout information.

PULASKI COUNTY HIGH SCHOOL
NUMBER OF STUDENTS
ENROLLED IN ALGEBRA II

		PROJECTED ENROLLMENT			
2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
261	216	218	220	222	225

PULASKI COUNTY HIGH SCHOOL
STUDENTS SCORING PASS/ADVANCED ON MATHEMATICS AND SCIENCE END-OF-COURSE STANDARDS OF LEARNING TESTS

	Pass/Advanced Percentages			Projected Pass/Advanced Percentages			
Subject-All Students	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Mathematics							
Algebra I	11	11	0	1	2	3	4
Geometry	14	11	3	4	5	6	7
Algebra II	14	16	8	9	10	11	12
Science							
Earth Science	15	15	17	18	19	20	21
Biology	10	10	15	16	17	18	19
Chemistry	5	5	5	6	7	8	9

PULASKI COUNTY HIGH SCHOOL
INDUSTRY CERTIFICATION, POSTSECONDARY CREDITS, AND WORKPLACE READINESS EXPERIENCES

		PROJECTED NUMBERS			
	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Number of Industry Certifications Earned	105	107	109	111	113
Number of Postsecondary Credits Earned (Advanced Placement/dual enrollment)	620	645	653	662	677
Number of Students Participating in Work-based Learning Experiences	119	126	128	130	133

PULASKI COUNTY HIGH SCHOOL
GRADUATION AND DROPOUT
INFORMATION

	PERCENT OF STUDENTS EARNING A STANDARD OR ADVANCED STUDIES DIPLOMA IN :		
	2011 COHORT FOUR YEARS	2010 COHORT FIVE YEARS	2009 COHORT SIX YEARS
Federal Graduation Indicator-All Students Target Group-Looks at graduates with a standard or advanced studies diploma only	77	75	76
Note: For 2012-2013, Pulaski County High School missed 1 target group under the Federal Graduation Indicator and is working on the required improvement plan. A four percent increase over the next four years would raise the graduation rate to approximately 80%.			

	2010-2011		2011-2012		2012-2013	
	1YR	3YR	1YR	3YR	1YR	3YR
Graduation and Completion Index-This is the measure that is used for State Accreditation. It uses a weighted point system.	—	—	92	90	90	91
Note: The accreditation benchmark for graduation is 85. Pulaski County High School met this benchmark and also the benchmarks for the four core subject areas. Pulaski County High School is fully accredited.						

			PROJECTED NUMBERS		
	COUNT/PERCENTAGE TOTAL ENROLLMENT		COUNT/PERCENTAGE TOTAL ENROLLMENT		
	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
School Dropout Information-Number of students in grades 7-12 who drop out	44/2.96% 1486	28/1.99% 1407	26/1.99% 1337	25/1.99% 1287	25/1.99% 1230

Program Details

The Pulaski County Governor's STEM Academy will be located on the campus of Pulaski County High School. Approximately 83 students in grades nine through eleven will be admitted to the Academy for the initial academic year (2013-14). Once at full capacity, the projected enrollment will be approximately 263 students. The Pulaski County Governor's STEM Academy program will be a full-day program with students attending all classes except for the New River Community College Jumpstart classes on the campus of Pulaski County High School. Jumpstart classes will be held at New River Community College.

Pulaski County Governor's STEM Academy students will choose specific career pathways within the Career Clusters of Science, Technology, Engineering & Mathematics; Architecture & Construction; and Manufacturing. The courses students choose will equip them with the skills they will need for success in their careers.

It needs to be noted that Engineering Explorations will offer students the opportunity to learn about careers in the different engineering and engineering technology fields. Qualified students at Pulaski County High School may attend the Southwest Virginia Governor's School. The Governor's School offers mathematics and science dual enrollment classes that will transfer to a four-year engineering degree program. With guidance from the superintendent, the director of Curriculum, Instruction, and Academic Support is working with New River Community College to add additional dual enrollment courses in mathematics and science at Pulaski County High School. These classes will also transfer to a four-year engineering degree program. Numerous discussions with local business partners and New River Community College have made it apparent that there is also a need in Pulaski County for employees with two-year or four-year degrees in engineering technology. Local businesses have made it clear that they are struggling to find employees that can implement designs and programs. This need was a factor in the selection of certain Career Clusters and Career Pathways.

The table below shows the Career Clusters and Career Pathways as they relate to the programs offered at Pulaski County Governor's STEM Academy.

Career Cluster	Career Pathway	Pulaski County Governor's STEM Academy Courses
Science, Technology, Engineering & Mathematics	Engineering and Technology	Engineering and Technology • *Drafting I (8530)* • *Drafting II (8531)* • *Drafting III-DE (8532)* • *Technology Foundations (8403) Materials and Processes Technology (8433)* • *Engineering Explorations I (8450)* • *Engineering Analysis and Applications II (8451)* **New River Community College Jumpstart Classes offered off campus–Dual Enrollment** • *AIR 121-Air Conditioning and Refrigeration I* • *ELE 130-Electricity* • *SAF 127-Industrial Safety* • *AIR 122-Air Conditioning and Refrigeration II* • *ELE 127-Residential Wiring Methods* • *ELE 138-National Electrical Code* • *Review I* • *AIR 235-Heat Pumps*
Architecture & Construction	Construction	Construction • *Electricity I (8533))* • *Electricity II-(8534)* • *Electricity III-DE (8535)*
Manufacturing	Production	Production • *Welding I (8672)* • *Welding II-DE(8673)* • *Welding III-DE (8674)*

Year two possible offerings:

Career Cluster	Career Pathway	Pulaski County Governor's STEM Academy Courses
Science, Technology, Engineering & Mathematics	Science and Mathematics	• *Medical Terminology-DE*
Health Science	Therapeutic Services	• *Introduction to Health and Medical Sciences* • *Nurse Aide I* • *Nurse Aide II-DE*
Architecture and Construction	Construction	• *Carpentry I* • *Carpentry II* • *Carpentry III-DE* • *Cabinetmaking I* • *Cabinetmaking II* • *Cabinetmaking III-DE*
Transportation, Distribution, and Logistics	Facility and Mobile Equipment Maintenance	• *Automotive Technology I* • *Automotive Technology II* • *Automotive Technology III-DE* • *Auto Body Repair I: Collision and Repair* • *Auto Body Repair II: Painting and Refinishing* • *Auto Body Repair III: Collision and Repair and Painting and Refinishing*

Future Additions beyond Year Two:
We are currently speaking with the Virginia Tech College of Agriculture and would like to add an Agriculture, Food, and Natural Resource Pathway. Additionally, we are working with New River Community College to partner on a program focusing on Instrumentation and Machining. To aid in this last endeavor, the Academy director is researching Project Lead The Way (PLTW).

Course Sequence

The Pulaski County Governor's STEM Academy Planning/Advisory Committee has selected the following course sequences for students:

Career Pathway	9th grade	10th grade	11th grade	12th grade
Engineering and Technology	Technology Foundations (8403)	Drafting I (8530) Materials and Processes Technology (8433)	Drafting II (8531) Engineering Explorations I (8450) NRCC Jumpstart Courses AIR 121 ELE 130 SAF 127	Drafting III-DE (8532) Engineering Analysis and Applications II (8451) NRCC Jumpstart Courses AIR 122 ELE 127 ELE 138 AIR 235
Construction		Electricity I (8533)	Electricity II (8534)	Electricity III-DE (8535)
Production		Welding I (8672)	Welding II-DE (8673)	Welding III-DE (8674)

Program and Course Descriptions

In addition to courses in English, mathematics, social studies, science, health and physical education, art, and world language, students in the STEM Academy will take the following STEM-related courses:

Drafting I (8530)—This class is recommended for students interested in architectural design, engineering, industrial/mechanical design, 3D modeling, or a career in CAD. The first nine weeks will consist of manual sketching and drafting. Students will learn the skills to produce complete and accurate drawings similar to those produced by professional drafters, designers, architects, and engineers. Students will be instructed with the latest version of AutoCAD and Pro/Engineer, some of the industry's leading design software packages. Students will create mechanical, technical, and architectural drawings with an emphasis on the technical skills necessary to produce quality technical drawings. This class allows students to participate in SkillsUSA.

Drafting II (8531)—This class will offer students the opportunity to expand their knowledge of drafting and design with the use of AutoCAD. They will be introduced to 3D modeling and architectural design. Emphasis will be placed on producing high-quality work at industry standards. Students' lab time will be project-based. Upon successful completion of this course, students may be required to take the Workplace Readiness Skills exam given, or another industry exam, to earn a credential. This class allows students to participate in SkillsUSA.

Drafting III (8532)—This class is for advanced students who have completed Drafting I and II. Students will concentrate on completing entire projects, from initial conception of design through the finished architectural, civil engineering, and 3D modeling design phase. Students will continue to work with 3D design and will complete several projects using this technology. This class allows students to participate in SkillsUSA. Drafting III is a dual enrollment class offered through New River Community College: DRE 114, Computer Aided Drafting & Design.

Electricity I (8533)—Students will be introduced to the field of electricity. The course will cover residential, commercial, and industrial wiring methods and materials. Students will be introduced to basic electric theory, electrical safety, electrical tools, electrical equipment, and electrical test equipment. Students will learn to read basic electrical blueprints and basic electrical schematics. Students will be introduced to both residential and commercial wiring systems, including conduit wiring systems. Workmanship and professionalism will be stressed throughout the course. Students will spend a significant amount of class time engaged in hands-on learning. Electricity I students will be involved in SkillsUSA. Students will gain leadership skills and have the opportunity to compete against other students at the local, district, state, and national level.

Electricity II (8534)—Students will practice commercial and industrial wiring methods. Electric motors, motor controls, and relays will be studied. Students will be expected to troubleshoot and repair a wide range of electrical devices and equipment. Students will be introduced to more complex electrical blueprints and electrical schematics. The National Electrical Code will be heavily emphasized. Students will bend conduit, install electrical wire and cables, install electrical devices, wire motor control systems, and troubleshoot circuits. Electrical rework and upgrades will also be covered. Students will be very involved in SkillsUSA.

Electricity III (8535)—Students' skills and knowledge in the field of electricity will be further developed in this course. Industrial electrical systems will be covered extensively and will include: three-phase electrical systems, industrial motor controls, distribution systems, industrial electrical motors, and transformers. Students enrolled in this course will spend significant time practicing and learning the National Electrical Code in preparation for future employment in the electrical trades. Students will be very involved in SkillsUSA. Electricity III is a dual enrollment class offered through New River Community College: ELE 127, Residential Wiring Methods.

Engineering Explorations (8450)—Students will be exposed to a variety of engineering specialty fields and related careers to determine whether they are good candidates for postsecondary educational opportunities in engineering. Students will gain a basic understanding of engineering history and design, using mathematical and scientific concepts. Students will participate in hands-on projects in a laboratory setting as they communicate information through team-based presentations, proposals, and technical reports.

Engineering Analysis and Applications II (8451)—This course will allow students to examine systems, the interaction of technology and society, ethics in a technological world, and the fundamentals of modeling while applying the engineering design process to areas of the designed world. Students will participate in hands-on projects in a laboratory setting as they communicate information through team-based presentations, proposals, and technical reports.

Materials and Processes Technology (8433)—Like "Myth Busters," we make and break things to understand chemistry and physics. Students will investigate the properties and uses of materials from the categories that all solid objects fall into; metals, ceramics, polymers, and composites. The course is spent completing mini-projects. Project examples include making clay molds, cement forms, glass, glass etching, chain mail, sheet metal working, CAD steel bridges, screwdrivers, wood products, rubber balls, foam balls, plastic molds, and more. Product analysis includes strength tests, endurance tests, impact tests, process tests, and analysis of reactive characteristics. Students study in a well-equipped production lab to create group and individual projects based on Virginia competencies, with emphasis placed on self-sufficiency, craftsmanship, and career awareness. This course is STEM-based, meaning all curriculum reinforces the benchmarks of science, technology, engineering, and mathematics education.

Technology Foundations (8433)—This course allows students to explore the wide variety of fields within technology through projects that revolve around a central theme of expressing their point of view on what they want to become. Students create a digital portfolio of all projects completed during the semester based on their "dream job." Students can add to this portfolio throughout high school and use it to submit to colleges and with job applications. Course projects include: hand and computer drafting, product development, manufacturing and marketing, printing, digital photography, animation, video, biotechnology, biomedical, transportation, construction, and power and energy. Students study in a well-equipped communications lab to produce group and individual projects based on Virginia competencies, with emphasis placed on self-sufficiency, craftsmanship, and career awareness. This course is STEM-based, meaning all curriculum reinforces the benchmarks of science, technology, engineering, and mathematics education.

Welding I (8672)—Students will receive instruction in metal fabrication and emerging welding technologies. This course will provide students with a basic knowledge of electricity and how it applies to welding. In addition, students will be introduced to the shielded metal arc welding, gas metal arc welding, gas tungsten arc welding, oxy-fuel welding, plasma arc cutting, and oxy-fuel cutting processes.

Welding II (8673)—Students learn to use gases and electric arc processes to fabricate and weld metal parts according to diagrams. Students will also learn to read blueprints and interpret weld symbols, as well as demonstrate many construction safety standards as they relate to the welding industry. Each student will be required to perform horizontal, vertical, and overhead welds using each major welding process. Welding II is a dual enrollment class offered through New River Community College: WEL 100, Fundamentals of Welding.

Welding III (8674)—Students will work toward receiving American Welding Society (AWS) qualifications to become an entry-level welder. Students will learn the various types of weld tests and perform destructive and nondestructive tests on their own welds. Each student will learn metallurgy and aluminum welding practices. Students will explore careers in welding as well as demonstrate maintenance procedures for each welding machine. Welding III is a dual enrollment class offered through New River Community College: WEL 123, Shielded Metal Arc Welding.

During their senior year, Pulaski County Governor's STEM Academy students will have the opportunity to take one or both capstone STEMinar classes. The two classes that will be offered are STEMinar Communication and STEMinar Math. Both classes will concentrate on real-world applications and promote soft skill acquisitions necessary for 21st century workplaces. The director of Curriculum, Instruction, and Academic Support, Pulaski County Governor's STEM Academy director, Central Office STEM liaison, STEM school counselor, and local business partners will all work together to develop both classes.

The STEMinar Communication class will promote both leadership and communication skills. The class will emphasize communication skills—reading, writing, listening, speaking—concentrating on "real-world" applications. The course will focus on practical application of communication as a business tool—using technical reports and manuals, business letters, business presentations, résumés, and applications.

The STEMinar Math class will reinforce general mathematics skills, emphasize speed and accuracy in computations, and will provide opportunities to use these skills in a variety of business applications. The STEMinar Math class will further reinforce general mathematics topics (e.g., arithmetic, measurement, statistics, ratio and proportion, exponents, formulas, and simple equations) by applying these skills to business problems and situations; applications might include wages, hourly rates, payroll deductions, sales, receipts, accounts payable and receivable, financial reports, discounts, and interest. This class is essential for any student that eventually plans to start his/her own business or to take over a family business.

Note: The capstone STEMinar classes will not be offered until the 2014-15 school year and will require School Board approval before they can be offered.

HVAC through New River Community College

AIR 121-122 Air Conditioning and Refrigeration I-II (four credits each)
Studies refrigeration theory, characteristics of refrigerants, temperature and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems.

AIR 235 Heat Pumps (three credits)
Studies theory and operation of reverse cycle refrigeration systems as applied to air conditioning, including service, installation and maintenance. Students are strongly encouraged to complete AIR 121 prior to enrolling in this course.

ELE 127 Residential Wiring Methods (two credits)
Studies wiring methods and standards used for residential dwellings. Provides practical experience in design, layout, construction, and testing of residential wiring systems by use of scaled mock-ups.

ELE 130 Electricity (Non-Electrical Students) (four credits)
Covers DC and AC theory, with some introduction to electrical machines. Prerequisite MTH 02 or equivalent.

ELE 138 National Electrical Code Review I (two credits)
Teaches purpose and interpretation of the National Electrical Code as well as various charts, code rulings and wiring methods. Prepares the student to take the journeyman level exam.

SAF 127 Industrial Safety (two credits)
Provides basic understanding of safety and health in an industrial situation. Includes hazardous materials, substances, conditions, activities, and habits, as well as the prescribed methods and equipment needed for the apprentice to protect himself/herself and others.

Pathway #1-Engineering and Technology

Pulaski County High School students selecting this pathway will have the opportunity to earn dual enrollment credits in the core academic areas as well as in drafting and refrigeration and air conditioning. Students may also take Advanced Placement courses at the Pulaski County High School to earn college credit. By taking advantage of course offerings at Pulaski County High School, the Pulaski County Governor's STEM Academy, and classes through New River Community College, students could earn an associate degree while in high school. Students selecting the Refrigeration and Air Conditioning Jumpstart Program through New River Community College could earn their Refrigeration and Air Conditioning Certificate while in high school. All students will be eligible for industry certifications through Workplace Readiness Skills for the Commonwealth.

Pulaski County High School students completing this pathway can pursue engineering degrees at a four-year postsecondary institution or an Associate of Arts and Sciences Degree in Engineering at New River Community College. New River Community College has an articulation agreement with Virginia Tech's College of Engineering, and students meeting entry requirements will be guaranteed admission to Virginia Tech's general engineering program. Students completing this pathway can also pursue an Associate of Applied Science Degree in Computer-Aided Drafting and Design at New River Community College.

The Engineering and Technology pathway meets the requirement of being in a STEM-related field. The U.S. Department of Commerce's Bureau of Economics and Statistics Administration released a report entitled *STEM: Good Jobs Now and for the Future.* This report listed both engineering and drafting as STEM occupation fields. The Engineering and Technology pathway also meets the region and local work force demand for high-wage, high-skill fields as identified by employers and work force officials. The Virginia Employment Commission's *Community Profile for Pulaski County* lists heating, air-conditioning, and refrigeration mechanics and installers as growth occupations for Pulaski County. It also lists professional, scientific, and technical services in its top-five projections for long-term industrial employment for Pulaski County. Conversations with local business and industry leaders have also confirmed that this pathway meets both the present and future work force needs of Pulaski County in high-wage, high-skill fields.

Pathway #2-Construction

Pulaski County High School students selecting this pathway will have the opportunity to earn dual enrollment credits in the core academic areas as well as in electricity. Students may also take Advanced Placement courses at Pulaski County High School to earn college credit. By taking advantage of course offerings at Pulaski County High School, the Pulaski County Governor's STEM Academy, and classes through New River Community College, students could earn an associate degree while in high school. All students will be eligible for industry certifications through Workplace Readiness Skills for the Commonwealth.

Pulaski County High School students completing this pathway can pursue an Associate of Applied Science Degree in Electrical Engineering Technology or an Associate of Applied Science Degree in Electronics Technology. Completion of these programs will also give students a head start on earning their electrical journeyman license, master electrician license, or contractor license.

The Construction pathway meets the requirement of being in a STEM-related field. The U.S. Department of Commerce's Bureau of Economics and Statistics Administration released a report entitled *STEM: Good Jobs Now and for the Future.* This report listed engineering technology as a STEM occupation field. The Construction pathway also meets the region and local work force demand for high-wage, high-skill fields as identified by employers and work force officials. The Virginia Employment Commission's *Community Profile for Pulaski County* lists construction in its top-five projections for long-term industrial employment for Pulaski County. Conversations with local business and industry leaders have also confirmed that this pathway meets both the present and future work force needs of Pulaski County in high-wage, high-skill fields.

Pathway #3-Production

Pulaski County High School students selecting this pathway will have the opportunity to earn dual enrollment credits in the core academic areas as well as in welding. Students may also take Advanced Placement courses at Pulaski County High School to earn college credit. By taking advantage of course offerings at Pulaski County High School, the Pulaski County Governor's STEM Academy, and classes through New River Community College, students could earn an associate degree while in high school. All students will be eligible for industry certifications through Workplace Readiness Skills for the Commonwealth. Students completing this pathway will also be eligible for the American Welding Society (AWS) certifications to become an entry-level welder.

Pulaski County High School students completing this pathway can pursue a certificate in welding. The certificate program will include welder qualification and certification with the American Society of Mechanical Engineer's (ASME) Code, Section IX, Welding and Brazing Qualification, and the American Welding Society's (AWS) Structural Welding Code, D1.1.

The Production pathway meets the requirement of being in a STEM-related field. The U.S. Department of Commerce's Bureau of Economics and Statistics Administration released a report entitled *STEM: Good Jobs Now and for the Future.* This report listed engineering technology as a STEM occupation field. At first glance, welding may not seem to fit into this description. Welding requires a solid understanding of both mathematical and scientific concepts. Welding is a critical component of materials science and mechanical and electrical components. The Production pathway also meets the region and local work force demand for high-wage, high-skill fields as identified by employers and work force officials. New River Community College's catalog states that at the present time the demand for welders exceeds the supply in both state and local industries. Conversations with local business and industry leaders have also confirmed that this pathway meets both the present and future work force needs of Pulaski County in high-wage, high-skill fields.

Student Enrichment Opportunities

During the course of the 2013-14 school year, the Pulaski County Governor's STEM Academy students will participate in various school organizations that will provide educational and leadership development activities geared toward the acquisition of 21st century work force skills. Students may participate in SkillsUSA (trade and industrial education student organization) and Technology Student Association (TSA). The establishment of a Governor's STEM Academy will promote increased student interest and participation in STEM-related student organizations and will reinforce the need to establish additional student organizations.

The Southwest Virginia Governor's School provides summer mathematics and science enrichment opportunities. The Association for Women in Computing at Virginia Tech sponsors the Women in Computing Day for middle school girls each spring. The VT-STEM K-12 Outreach Initiative provides a wide variety of enrichment opportunities for both middle school and high school students.

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

The Pulaski County Governor's STEM Academy will adhere to the Governor's Exemplary Standards Award Program for Career and Technical Education.

Benchmarks

Pulaski County Governor's STEM Academy students must achieve one or more of the following benchmarks:

- Earn one or more industry certifications or state occupational licenses; or
- Earn at least nine transferable college credits as defined in the Early College Scholarship program (includes dual enrollment, AP, and other options); or
- Earn an Associate Degree.

Work-Based Learning Experiences

The goal for the first year of the Pulaski County Governor's STEM Academy will be to reach agreements with local employers to offer internships, mentorships, and job-shadowing programs for Academy students. At the present time, the school division has partnership agreements with six business/industries including Caterpillar and Appalachian Machine Inc. During the first year of the Governor's STEM Academy, the Academy director will work closely with these six businesses to create opportunities for site tours of the businesses, develop business mentorships that will initially offer programs and presentations to the Governor's STEM Academy students, and create opportunities for job shadowing. It must be noted that due to the dangers involved with many of the industries in Pulaski County, internships and some job-shadowing programs will not be fully implemented until the third year of the program due to age and insurance restrictions.

In her article "Integrated STEM Education through Project-Based Learning," Diana Laboy Rush states that current research indicates that project-based learning increases student interest in science, technology, engineering, and mathematics (STEM). She further states that project-based learning increases student's problem-solving abilities because it focuses on authentic problems and building real solutions (artifacts). Pulaski County Governor's STEM Academy students will study and work with an integrated, real-world curriculum that will help them see the connections between mathematics, science, and technology, and the 21st century work force readiness skills and needs. Project-based learning activities will be an integral component of the curriculum for each pathway. During their senior year, Pulaski County Governor's STEM Academy students will have the opportunity to take one or both capstone STEMinar classes. Both classes will concentrate on real-world applications and promote soft skill acquisitions necessary for 21st century workplaces.

On April 8, 2011, the town of Pulaski and the surrounding area were hit by twin tornadoes which destroyed 31 buildings, including homes and businesses. Almost two years later, parts of the town are still undergoing the rebuilding process. To help with this process, the Pulaski County Governor's STEM Academy will work with the local Habitat for Humanity affiliate to build a Habitat house on the campus of Pulaski County High School. This will give Governor's STEM Academy students the opportunity to apply their classroom skills and gain valuable worksite experience, while also being a part of a service learning project.

Workplace simulations are an exciting new initiative that will help the Pulaski County Governor's STEM Academy students acquire the soft skills that they will need to be successful in the workforce. Mock interviews, how to conduct yourself in a meeting, problem-solving situations, and how to present yourself in the workplace are examples of possible simulations. The TV/Video Production teacher, Academy director, and local business partners will work closely together to create and tape simulations for instructional purposes.

During the summer of 2014, select students in the Pulaski County Governor's STEM Academy will have the opportunity to participate in a summer internship opportunity sponsored by the school system. In Pulaski County, the director of Operations, Maintenance, and Transportation for the school system also manages the same operations for the county. The Pulaski County Joint Services Summer Internship Program will provide internship opportunities in the Operations, Maintenance, and Transportation Departments of both the school system and the county.

(See Appendix E—Internship Forms)

Length of Program and Daily Schedule

Pulaski County High School operates on a four-by-four block scheduling plan, in which students take four courses during a 90-day semester. Each plan of study is a full day, academic-year program. Each Pulaski County Governor's STEM Academy student is expected to complete a pathway sequence of courses. All Pulaski County Governor's STEM Academy dual enrollment courses are taught at Pulaski County High School except for Jumpstart courses, which are taught at New River Community College.

The Academy director and school counselors will ensure that students are taking appropriate level mathematics and science courses in conjunction with the required Pulaski County Governor's STEM Academy courses. In addition to STEM coursework, students will receive a well-rounded foundation in English, social studies, and health and physical education, and will have the opportunity to study arts and world languages. (See Appendix A—Bell Schedule and Appendix B—Plans of Studies)

Materials and Equipment

Materials and equipment for the Pulaski County Governor's STEM Academy will follow state purchasing guidelines as well as the county's Joint Purchasing Policy. Funding for materials and equipment may be obtained through donations from local industry and higher education partners, donations from the Pulaski County Educational Foundation, local school division funds, state equipment funds, and the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV).

Equipment purchased with state or federal funds will be selected from the state-approved equipment list for career and technical education programs. Equipment purchased through the Perkins grant will meet all applicable grant regulations.

Description of Proposed Program Evaluation

To help Pulaski County students meet the increased standards and expectations, school administrators, counselors, teachers, career coaches, and Central Office STEM liaison will work closely together to disaggregate testing data, carefully monitor student achievement, make curriculum adjustments where necessary, and provide extra academic support.

Starting with the 2013-14 school year, the Planning/Advisory Committee will meet quarterly to review the progress of the Pulaski County Governor's STEM Academy and to provide commentary on areas of functional and specialized needs.

Pulaski County Public Schools has worked in partnership with school and community stakeholders to create a comprehensive plan designed to equip all students to be responsible and self-reliant citizens in our increasingly complex and global society. The plan fosters the development of a 21st century skills pipeline that will prepare today's students to be tomorrow's working adults. Each year the Pulaski County School Board will receive a report detailing the division's progress in meeting the action items in each lead area of the Comprehensive Plan. The goals of the Pulaski County Governor's STEM Academy must be aligned to the division's Comprehensive Plan. Like all other programs in the division, the Pulaski County Governor's STEM Academy will undergo a scheduled review by the superintendent or his designee to ensure that the program is meeting its established goals and the needs of its students. The Academy director will work closely with the Planning/Advisory Committee to monitor the performance measures for the Academy. The STEM teachers, data coordinator for the high school, division STEM liaison, and the Academy director will work together as a professional learning community (PLC) and will closely monitor all Academy data to determine both areas of strength and weakness within the STEM curriculum and instructional activities. Pulaski County Governor's STEM Academy students, their parents, Academy instructional faculty, the community, and local business partners will be periodically surveyed to ensure that everyone has a voice in the evaluation process. The school division will also annually collect and report data to the Virginia Department of Education related to student achievement, goal achievement, and any other required indicators.

Administrative Procedures

Partnerships

The overall goals of the Pulaski County Governor's STEM Academy are to provide students with 21st century, STEM-enriched technological skills and knowledge necessary to succeed in postsecondary education and in the world of work. The local business and industry partners and postsecondary institution partners play an integral role in the attainment of these goals. The Pulaski County Governor's STEM Academy's partners will provide invaluable feedback on occupational trends and 21st century work force skills and will provide additional resources to the Academy. Additionally, the partnerships will provide students with opportunities to meet and network with potential employers and departmental personnel within local institutions of higher education.

Student Recruitment, Selection Criteria, and Admission Procedures

The Pulaski County School Board passed The Whole Child Resolution on September 11, 2008. The Whole Child Resolution served as a framework for engaging community conversations around how to design a comprehensive plan that supports the whole child. In support of this resolution, student recruitment will not just be the responsibility of the Pulaski County Governor's STEM Academy director but also members of the Planning/Advisory Committee, teachers, school administrators, school counselors, career coach, parents, local business partners, and local government and nongovernment agencies.

Recruitment will begin in the division's elementary schools, with students having the opportunity to participate in site tours and informational programs that will be coordinated by the Academy director. Beginning in middle school, the Pulaski County Governor's STEM Academy director will coordinate visits to the middle schools along with parent information nights, open houses, and school-related functions. The major goal of these activities will be to expose students and parents not only to the multiple STEM pathway opportunities at the Academy but also to expose them to postsecondary pathway opportunities, licensure opportunities and, most importantly, future job opportunities in STEM fields. Eligible high school students and their parents will also be exposed to this same focused recruitment process.

Students must meet the following criteria to be selected for the Pulaski County Governor's STEM Academy:

- Recommendation from a teacher, school counselor, school administrator, or the Academy director;
- Complete a Pulaski County Governor's STEM Academy application;
- Passing scores on the highest level attained on the English and mathematics Standards of Learning tests; and

- Complete the New River Community College online application.

Students who are selected for the Academy will be required to meet the following criteria to complete the program successfully:

- Maintain a minimum 2.5 overall grade-point average;
- Recommendation from the Academy program area teacher;
- Successfully complete the necessary dual enrollment placement test;
- Complete dual enrollment credit courses and earn a "C" or better in the course;
- Passing scores on the highest level attained on the English and mathematics Standards of Learning tests;
- Complete courses within a specific pathway in the STEM Engineering and Technology, Architecture & Construction, and Production Career Clusters;
- Achieve one or more of the following: an industry certification, at least nine transferrable college credits, or an Associate Degree;
- Complete school/community service; and
- Adhere to the student code of conduct and attendance policies.

(See Appendix F—Pulaski County Governor's STEM Academy Student Application)

Note: New River Community College does not set a baseline grade-point average for admission.

Student Code of Conduct, Attendance, and Safety

According to the policy manual for Pulaski County Public Schools, each student has the right to expect an educational environment in which he or she can strive to achieve his or her intellectual potential. The student is expected to attend school regularly, be diligent in his/her studies, and conduct himself/herself in such a way that the rights and privileges of others are not violated. The student is expected to accept and demonstrate the obligation of good citizenship to help prevent problems from happening and help solve problems if they occur.

The Pulaski County Governor's STEM Academy's student discipline, attendance, and safety will be handled according to the school division's Standards of Student Conduct. It is the responsibility of the Pulaski County School Board to adopt policy and regulations and the administration to issue regulations establishing rules of conduct for student behavior and a list of

possible corrective actions for violation of the Standards of Student Conduct in order to protect the health, safety, and welfare of its students.

One of the essential components of the Governor's STEM Academy is the forging of relationships between the Academy and local business partners. During the STEM application process, the Academy director and Central Office STEM liaison have spent considerable time contacting and talking with local business and industry leaders in Pulaski County. Invariably, the discussions come around to the hard and soft skills that employers in the area are looking for in both current and future employees. From the discussions, it became clear that attendance issues are not just a concern of the local school system but also of local business and industry. With this in mind, the Pulaski County Governor's STEM Academy plans to put special emphasis on attendance and promoting the early establishment of good attendance habits. The Pulaski County Governor's STEM Academy instructional faculty, school counselor, and Academy director will work closely with local business and industry to provide presentations, panel discussions, and videos that promote good attendance habits.

Transportation

Transportation will be provided by Pulaski County Public Schools Department of Operations, Transportation, and Maintenance. Transportation will be in compliance with all applicable local, state, and federal regulations. All students who attend Pulaski County Public Schools and are accepted into the Pulaski County Governor's STEM Academy at Pulaski County High School will be provided bus transportation. This is less of an issue for the Pulaski County Governor's STEM Academy because of its location in the Career and Technical Education Center, on the Pulaski County High School campus. Students will provide their own transportation to New River Community College to attend Jumpstart courses.

Staff Recruitment, Selection, and Assignment

The Pulaski County Governor's STEM Academy director will supervise and evaluate the Academy instructional faculty according to policies set by the Pulaski County School Board and outlined in the School Board Policy Manual. Personnel will be hired who meet the Virginia highly qualified teacher licensure requirements and/or postsecondary faculty qualifications required by the dual enrollment partner institution. The Academy instructional faculty will have all necessary industry-specific training, experience, and certifications.

Staff Development

Pulaski County Public Schools is committed to providing research-based professional staff development. The goals of the staff development program are to advance best practices in all areas, promote the use of instructional technologies, and to develop individualized instructional practices that support achievement for all students. Pulaski County Public Schools offers in-service opportunities throughout the school year within the CTE program disciplines and overall as a professional learning community.

Within the Pulaski County Governor's STEM Academy, teachers will be given the opportunity to participate in engaging STEM professional development activities to assist in providing high-quality STEM instruction to prepare students for Academy coursework and future employment opportunities. Teachers will participate in summer institutes, conferences, workshops, and online and local professional staff development opportunities to expand their use of project-based and experiential learning strategies and activities. Project Lead The Way (PLTW) has been recommended as an additional way to provide staff development to Governor's STEM Academy instructional faculty. The Academy director and division superintendent are currently researching the program.

The Pulaski County Governor's STEM Academy director will work closely with local business and industry partners to determine required soft skills and hard skills necessary for the local work force. The Academy director will use this additional data to help plan professional development activities for the Pulaski County Governor's STEM Academy instructional faculty. Local business and industry partners will lend their expertise by serving as guest speakers or participating in panel discussions as part of staff development offerings.

Staff Evaluation

Staff will be evaluated according to the guidelines outlined in the *Pulaski County Public Schools Teacher Assessment Handbook* using the new Teacher Assessment Instrument.

Parent, Student, and Community Involvement

An essential component of the Pulaski County Governor's STEM Academy will be the active involvement of students, parents, and the local community in the Academy program planning and evaluation process. An essential tenet of the Academy will be to provide information as early as possible to both students and parents about the Academy, the STEM pathway opportunities, postsecondary pathway opportunities, industry certifications and credentialing options and, most importantly, future job opportunities in STEM fields. This will be done through student and parent information nights and workshops, parent-teacher conferences, college visits, college-sponsored seminars and activities, surveys, guidance classroom activities, and resources and partnership opportunities provided by local business and industry. A strong recruitment program will not only get students interested in the STEM pathways but will also provide additional incentives to keep students in school.

Informational programs about the Pulaski County Governor's STEM Academy will begin in the division's elementary schools. Students will have the opportunity to participate in pre-Academy programs, including site tours of the Academy and informational programs that will be coordinated by the Academy director. At the middle school level, all students will have the opportunity to participate in pre-academy programs, including site tours of the Pulaski County Governor's STEM Academy, open houses, parent nights, and special seminars. The Academy director will work with the middle school counselors to add STEM pathway information and a career interest inventory to the middle school classroom guidance curriculum. A Governor's

STEM Academy brochure and Web site will offer additional information to prospective students and their parents (See Appendix J). Additionally, the high school counselors will provide STEM information to all eighth graders and their parents during the registration process for their freshman year at Pulaski County High School.

During high school, school counselors will meet with all students to review transcripts and discuss options available in the course catalog. This will provide additional opportunities for students to learn about the STEM pathways. School counselors will also be available to work with students on academic and career plans. Additionally, counselors at Pulaski County High School will review and discuss postsecondary opportunities, school admission requirements, industry certifications and credentialing options, career studies, and various degree programs that will be available to graduates.

The Chamber of Commerce, local businesses, and New River Community College will be instrumental in providing additional resources and opportunities for students enrolled in the Academy. Furthermore, this partner group will provide essential feedback and data to ensure that all Academy program options are aligned with postsecondary education and industry needs.

Students in the Pulaski County Governor's STEM Academy have the opportunity to earn the following diploma seals upon graduation: Governor's Seal, Board of Education's Advanced Mathematics & Technology Seal, the Board of Education's Career and Technical Education Seal, and the Board of Education Seal. Upon completion of the Academy requirements and graduation, students will have the skills they need to continue postsecondary opportunities with local college programs including New River Community College.

Budget/Certificate of Insurance

The Pulaski County Governor's STEM Academy has an annual operating budget of $267,408.01. Funding for the program will be secured through Pulaski County Public Schools. Federal, state, and in-kind funds will be used to support activities of the Pulaski County Governor's STEM Academy. In addition to the school division's resources, grants and in-kind donations from business partners will also be accepted to supplement the program. Equipment and software updates will be funded through the Career and Technical Education budget and Perkins funds. The majority of the funds will be allocated for personnel and equipment. (See Appendix H—Budget)

(See Appendix G—Liability Insurance Certificate and Certificate of Property Insurance)

Appendices

Appendix A – Bell Schedule

Pulaski County Governor's STEM Academy
Bell Schedule
2013-2014

Regular Day

First Block	8:28	–	10:00
Second Block	10:04	–	11:41
First Lunch	11:41	–	12:11
Third Block	12:15	–	1:47
Split Third Block	11:45	–	12:31
Middle Lunch	12:31	–	1:01
Split Third Block	1:05	–	1:47
Third Block	11:45	–	1:17
Third Lunch	1:17	–	1:47
Fourth Block	1:51	–	3:26
Student Driver Release			3:18
First Bus Load Release			3:22
All Other Students Release			3:26

2 Hour Late

First Block	10:28	–	11:30
Second Block	11:34	–	12:41
First Lunch	12:41	–	1:11
Third Block	1:15	–	2:17
Split Third Block	12:45	–	1:15
Middle Lunch	1:15	–	1:45
Split Third Block	1:49	–	2:17
Third Block	12:45	–	1:47
Third Lunch	1:47	–	2:17
Fourth Block	2:21	–	3:26
Student Driver Release			3:18
First Bus Load Release			3:22
All Other Students Release			3:26

Club Day Schedule

First Block	8:28	–	9:34
Second Block	9:38	–	10:46
1st Club	10:50	–	11:36
First Lunch	11:36	–	12:06
Third Block	12:10	–	1:14
Third Block	11:40	–	12:10
Second Lunch	12:10	–	12:40
Third Block	12:44	-	1:14
Third Block	11:40	–	12:44
Third Lunch	12:44	–	1:14
2nd Club	1:18	–	2:04
Fourth Block	2:08	–	3:26
Student Driver Release			3:18
First Bus Load Release			3:22
All Other Students Release			3:26

2 Hour Early Release

First Block	8:28	–	9:30
Second Block	9:34	–	10:38
First Lunch	10:38	–	11:08
Third Block	11:12	–	12:16
Split Third Block	10:42	–	11:12
Middle Lunch	11:12	–	11:42
Split Third Block	11:46	–	12:16
Third Block	10:42	–	11:46
Third Lunch	11:46	–	12:16
Fourth Block	12:20	–	1:26
Student Driver Release			1:18
First Bus Load Release			1:22
All Other Students Release			1:26

Appendix B – Plans of Studies

CareerClusters™ PATHWAYS TO COLLEGE & CAREER READINESS
Architecture & Construction

Commonwealth of Virginia Plan of Study

Rev: 5/18/11

Student Name: John Cougar
School: Pulaski County High School
Date:

Cluster: Architecture & Construction **Pathway:** Construction

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

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses Source: Administrative Planning Guide http://www.cteresource.org/apg/	SAMPLE – Occupations Relating to This Pathway: http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml http://www.careerclusters.org http://www.cteresource.org/cpg/
Graduation Requirements: http://www.doe.virginia.gov/instruction/graduation/index.shtml								•Electrician •Electrical Power •Line Installer and Repairer •Electrical and Electronics Engineering Technician •Power Plant Operator •Power Distribution Technician •Fiber Optics Technician •Industrial Machinery Mechanic •Communications Technician
MIDDLE	7	English (1110)	Math (3111)	Life Science (3111)	U.S. History 1865 to Present (2354)	Introduction to Technology (8483)	Keyboarding (BUS 6150)	
MIDDLE	8	English (1120)	Math (3112)	Physical Science (4125)	Civics & Economics (2354)	Computer Solutions (BUS 6609) PE		
Career Assessment: Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school: VA Wizard ☒ or other assessment (please indicate): _____								
SECONDARY	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography (2215)	Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE): Economics and Personal Finance (BUS 6120) Accounting (BUS 6320) Adv Accounting (BUS 6321)	Electricity I (8533)	
SECONDARY	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography (2216)		Electricity II (8534) DE	
SECONDARY	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Electricity III (8535) DE	
SECONDARY	12	English (1160) DE ENG 111	Trigonometry/Math Functions (3162)	Physics (4510)	US/VA Government (2440)		Jumpstart through NRCC: ETR 113 DE, ELE 149 DE	
High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)								

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

Workplace Readiness Skills for the Commonwealth (CTECS)
Electrical Construction Technology
Residential Wiring

Additional Learning Opportunities:
CTSO Organization(s): ☐ DECA ☐ FBLA ☐ FCCLA ☐ FFA ☐ FEA ☐ HOSA x SkillsUSA ☐ TSA

Work-Based Learning:
☒ Career Research ☐ Cooperative Education ☐ Internship ☐ Mentorship
☐ Job Shadowing ☐ Service Learning Project ☐ Student Apprenticeship

Postsecondary: Placement Assessments such as COMPASS & SAT II

College Entrance Exams such as ACT & SAT

POSTSECONDARY	SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)			
	Pathway	**Associate Degree, College Certificate, or Apprenticeship**	**Bachelors Degree**	**Postgraduate Degree**
	Construction	Electronics Technology – AAS Electrical Engineering Technology - AAS	Locally Determined	Locally Determined

College: New River Community College **School Division(s):** Pulaski County Public Schools

Postsecondary: Electronics Technology – AAS

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally

Semester	English	Mathematics	Science	Social Science	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1st Semester	ENG 111 (DE) English Composition I 3 credits	MTH 115: Technical Mathematics I 3 credits		SDV 100 College Success Skills 1 credit	ETR 113: DC & AC Fundamentals I 4 credits	ITE 115: Intro. to Computer Applications & Concepts 3 credits	SAF 127: Industrial Safety 2 credits	
Year 1 2nd Semester			PHY 131: Applied Physics I 3 credits		ELE 149: Wiring Methods in Industry 3 credits	ETR 114: DC & AC Fundamentals II 4 credits	ETR 167: Logic Circuits & Systems 4 credits	ETR 203: Electronic Devices I 4 credits
Year 2 1st Semester				Social Science Elective 3 credits	ELE 233: PLC Systems I 4 credits	CAD 231: Computer Aided Drafting 2 credits	ETR 241: Electronic Communications I 3 credits	MEC 155: Mechanisms 2 credits ELE 176: Intro. to Alternative Energy/Hybrid Systems 3 credits
Year 2 2nd Semester			Health or PE Elective 1 credits	Social Science Elective 3 credits	ELE 177 Photovoltaic Energy Systems 4 credits	ENE 2XX: Building Automation and Energy Management Systems 3 credits	ETR 231: Principles of Lasers and Fiber Optics I 4 credits	CST 137: Oral Interpretation 3 credits
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: Journeyman license Master license Contractor license	**Additional Suggested Learning Opportunities:** **Work-Based Learning:** ☒ Cooperative Education ☒ Internship ☐ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☐ Registered Apprenticeship

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

Notes:

College: New River Community College **School Division(s):** Pulaski County Public Schools

Postsecondary: Electrical Engineering Technology – AAS

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally

Semester	English	Mathematics	Science	Social Science	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1st Semester	ENG 111 (DE) English Composition I 3 credits	MTH 115: Technical Mathematics I 3 credits		SDV 100 College Success Skills 1 credit	ETR 113: DC & AC Fundamentals I 4 credits	ITE 115: Intro. to Computer Applications & Concepts 3 credits	SAF 127: Industrial Safety 2 credits	
Year 1 2nd Semester			PHY 131: Applied Physics I 3 credits		ELE 149: Wiring Methods in Industry 3 credits	ETR 114: DC & AC Fundamentals II 4 credits	ETR 167: Logic Circuits & Systems 4 credits	ETR 203: Electronic Devices I 4 credits
Year 2 1st Semester				Social Science Elective 3 credits	ELE 233: PLC Systems I 4 credits	CAD 231: Computer Aided Drafting 2 credits	ELE 127: Residential Wiring Methods 2 credits	MEC 155: Mechanisms 2 credits ELE 211: Electrical Machines I 4 credits

	Year 2 2nd Semester			Health or PE Elective 1 credits	Social Science Elective 3 credits	ELE 138: National Electrical Code Review I 2 credits	ELE 212: Electrical Machines II 4 credits	ETR 249: Electrical Control Systems 4 credits	CST 137: Oral Interpretation 3 credits
	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: Journeyman license Master license Contractor license	**Additional Suggested Learning Opportunities:** **Work-Based Learning:** ☒ Cooperative Education ☒ Internship ☐ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☐ Registered Apprenticeship

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

Notes:

Rev: 6/12

Commonwealth of Virginia Plan of Study

Student Name: Cougar
School: Pulaski County High School
Date: 1/15/13

Cluster: Manufacturing **Pathway:** Production

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

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses Source: Administrative Planning Guide http://www.cteresource.org/apg/	SAMPLE – Occupations Relating to This Pathway: http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml http://www.careerclusters.org http://www.cteresource.org/cpg/
		NOTE: Indicate State Course Titles and Codes						
Graduation Requirements: http://www.doe.virginia.gov/instruction/graduation/index.shtml								
MIDDLE	7	English 7 (1110)	Math 7 (3111)	Life Science (4115)	U S History (2354)	Introduction to Technology (8483)	Keyboarding (BUS 6150)	- Welder, Combination Welder, Fitter-Welder, Materials Inspector-Visual Inspector-Welder and Cutter (Burner), and Welder-Fitter
MIDDLE	8	English 8 (1120)	Math 8/Pre-Algebra (3112)	Physical Science (4125)	Civics & Economics (2357)	Computer Solutions (BUS 6609) PE		
Career Assessment: Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school: VA Wizard X or other assessment (please indicate): _____								
SECONDARY	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography I (2215)	Economics & Personal Finance (6120) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE):	Welding I (8672)	
SECONDARY	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography II (2216)		Welding II (8673) DE WEL 100	
SECONDARY	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Welding III (8674) DE WEL 123	
SECONDARY	12	English (1160) DE ENG 111	Trigonometry/ Advanced Algebra (3137)	Physics (4510) or Principles of Technology I and II (9811/9812)	US/VA Government(2440)		Jumpstart offered through NRCC: MAC 131 DE, ITE 115 DE, WEL 124 DE	
		High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)						

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

Workplace Readiness Skills for the Commonwealth (CTECS)

Additional Learning Opportunities:
CTSO Organization(s): ☐ DECA ☐ FBLA ☐ FCCLA ☐ FFA ☐ FEA ☐ HOSA X SkillsUSA ☐ TSA

Work-Based Learning:
X Career Research ☐ Cooperative Education X Internship Mentorship
X Job Shadowing X Service Learning Project ☐ Student Apprenticeship

Postsecondary: Placement Assessments such as Virginia Placement Test or COMPASS

College Entrance Exams such as ACT & SAT

POSTSECONDARY	SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)			
	Pathway	**Associate Degree, College Certificate, or Apprenticeship**	**Bachelors Degree**	**Postgraduate Degree**
	Production	AWS Certificate		

College: New River Community College **School Division(s):** Pulaski County Public Schools

Postsecondary: Welding Certificate

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally

Semester	English	Mathematics	Science	Social Studies	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1st Semester	SDV: College Success Skills 1 credit	MTH 103: Technical Mathematics I 3 credits			MAC 131: Machine Lab 1 2 credits	WEL 100: DE Foundations of Welding 3 credits	WEL 123: Shielded Metal ARC Welding 4 credits	ITE 115: Intro to Computer Applications and Concepts 3 credits
Year 1 2nd Semester	ENG 108: Critical Reading and Study Skills 3 credits				WEL 124: Shielded Metal Arc Welding (Advanced) 4 credits	WEL 145: Welding Metallurgy 3 credits	WEL 150: Welding Drawing and Interpretation 2 credits	WEL 160: Gas Metal ARC Welding 4 credits
Year 2 1st Semester			Health or PE Elective 2-3 credits	Social Science Elective 3 credits	WEL 127: Pipe Welding II 3 credits	WEL 130: Inert Gas Welding (GTAW) 4 credits	WEL 146: Welding Quality Control 3 credits	
Year 2 2nd Semester								
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: AWS Certificate	**Additional Suggested Learning Opportunities:** **Work-Based Learning:** X Cooperative Education X Internship ☐ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☐ Registered Apprenticeship

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

Notes:

Rev: 5/18/11

Commonwealth of Virginia Plan of Study

Student Name: John Cougar
School: Pulaski County High School
Date:

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

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

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses Source: Administrative Planning Guide http://www.cteresource.org/apg/	SAMPLE – Occupations Relating to This Pathway: http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml http://www.careerclusters.org http://www.cteresource.org/cpg/
Graduation Requirements: http://www.doe.virginia.gov/instruction/graduation/index.shtml								•Engineer •Electrical Engineer •Electronics Engineer •Industrial Engineer •Mechanical Engineer •Civil Engineering Technicians •Electrical and Electronics Engineering Technicians •Environmental Engineering Technicians •Industrial Engineering Technicians •Mechanical Engineering Technicians
MIDDLE	7	English (1110)	Math (3111)	Life Science (3111)	U.S. History 1865 to Present (2354)	Introduction to Technology (8483)	Keyboarding (BUS 6150)	
	8	English (1120)	Math (3112)	Physical Science (4125)	Civics & Economics (2354)	Computer Solutions (BUS 6609) PE		
Career Assessment: Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school: VA Wizard ☒ or other assessment (please indicate): _____								
SECONDARY	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography (2215)	Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE): Economics and Personal Finance (BUS 6120) Accounting (BUS 6320) Adv Accounting (BUS 6321)	Technology Foundations (8403)	
	10	English (1140)	Geometry (3143)	Biology (4310) DE BIO 101	World History/ Geography (2216)		Materials and Processes Technology (8433)	
	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Engineering Explorations I (8450)	
	12	English DE(1160) ENG 111	Calculus DE (3177) MTH 175	Physics (4510)	US/VA Government (2440) DE PLS 135		Engineering Analysis and Applications II (8451)	
High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)								

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

Workplace Readiness Skills for the Commonwealth (CTECS)

Additional Learning Opportunities:
CTSO Organization(s): ☐ DECA ☐ FBLA ☐ FCCLA ☐ FFA ☐ FEA ☐ HOSA x SkillsUSA ☐ TSA

Work-Based Learning:
☒ Career Research ☐ Cooperative Education ☐ Internship ☐ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☐ Student Apprenticeship

Postsecondary: Placement Assessments such as COMPASS & SAT II

College Entrance Exams such as ACT & SAT

POSTSECONDARY	SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)			
	Pathway	**Associate Degree, College Certificate, or Apprenticeship**	**Bachelors Degree**	**Postgraduate Degree**
	Engineering and Technology	Engineering – AAS Engineering Computer Science Specialization - AAS	Locally Determined	Locally Determined

College: New River Community College **School Division(s):** Pulaski County Public Schools

Postsecondary: Engineering – AAS

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally

Semester	English	Mathematics	Science	Social Science	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1st Semester	ENG 111 (DE) English Composition I 3 credits	MTH 175: Calculus of One Variable I 3 credits	CHM 111: College Chemistry I 4 credits	SDV 100 College Success Skills 1 credit	EGR 120: Intro to Engineering 2 credits	Humanities/Fine Arts Elective 3 credits	MTH 177: Intro Linear Algebra 2 credits	
Year 1 2nd Semester	ENG 112: College Composition II 3 credits	MTH 176: Calculus of One Variable II 3 credits	CHM 112: College Chemistry II 4 credits		EGR 115: Engineering Graphics (With AutoCad) 2 credits	EGR 126: Computer Programing for Engineers 3 credits	MTH 178: Topics in Analytic Geometry 2 credits	
Year 2 1st Semester		MTH 277: Vector Calculus 4 credits	PHY 231: General University Physics I 5 credits	Social Science Elective 3 credits		Humanities/Fine Arts Elective 3 credits	EGR 140: Engineering Mechanics- Statics 3 credits	
Year 2 2nd Semester	CST 100: Principles of Public Speaking 3 credits	MTH 279: Differential Equations 4 credits	PHY 232: University Physics II 5 credits	Social Science Elective 3 credits	Health or Physical Education 2 credits			
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 and State University
Degree or Major: Engineering
Number of Articulated CC Credits: 70

Notes:

College: New River Community College **School Division(s):** Pulaski County Public Schools

Postsecondary: Engineering Computer Science Specialization – AAS

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally

Semester	English	Mathematics	Science	Social Science	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1st Semester	ENG 111 (DE) English Composition I 3 credits	MTH 175: Calculus of One Variable I 3 credits	CHM 111: College Chemistry I 4 credits	SDV 100 College Success Skills 1 credit	EGR 120: Intro to Engineering 2 credits	MTH 177: Intro Linear Algebra 2 credits	Humanities/Fine Arts Elective 3 credits	
Year 1 2nd Semester	ENG 112: College Composition II 3 credits	MTH 176: Calculus of One Variable II 3 credits		Social Science Elective 3 credits	EGR 115: Engineering Graphics (With AutoCad) 2 credits	MTH 178: Topics in Analytic Geometry 2 credits		CSC 205: Computer Organization 3 credits
Year 2 1st Semester		MTH 277: Vector Calculus 4 credits	PHY 231: General University Physics I 5 credits	Social Science Elective 3 credits	CSC 201: Computer Science I 4 credits	Health or PE Elective 1 credits		
Year 2 2nd Semester	CST 100: Principles of Public Speaking 3 credits	MTH 279: Differential Equations 4 credits	PHY 232: University Physics II 5 credits		Humanities/Fine Arts Elective 3 credits	CSC 202: Computer Science II 4 credits		

	College courses offered locally in the high school for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)	
	Related Industry Certifications Available:	**Additional Suggested Learning Opportunities:** **Work-Based Learning:** ☒ Cooperative Education ☒ Internship ☐ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☐ Registered Apprenticeship
UNIVERSITY	University/College: Degree or Major: Number of Articulated CC Credits:	
Notes:		

Rev: 5/18/11

Commonwealth of Virginia Plan of Study

Student Name: John Cougar
School: Pulaski County High School
Date:

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

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

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses Source: Administrative Planning Guide http://www.cteresource.org/apg/	SAMPLE – Occupations Relating to This Pathway: http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml http://www.careerclusters.org http://www.cteresource.org/cpg/
Graduation Requirements: http://www.doe.virginia.gov/instruction/graduation/index.shtml								
MIDDLE	7	English (1110)	Math (3111)	Life Science (3111)	U.S. History 1865 to Present (2354)	Introduction to Technology (8483)	Keyboarding (BUS 6150)	• CAD Specialist • CAD Technician • CAD Supervisor • Electrical CAD Technician • Fixed Design CAD Technician • Machine Design CAD Technician • 3D Solid Modeling
MIDDLE	8	English (1120)	Math (3112)	Physical Science (4125)	Civics & Economics (2354)	Computer Solutions (BUS 6609) PE		
Career Assessment: Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school: VA Wizard ☒ or other assessment (please indicate): _____								
SECONDARY	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography (2215)	Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE): Economics and Personal Finance (BUS 6120) Accounting (BUS 6320) Adv Accounting (BUS 6321)	Drafting I (8530)	
SECONDARY	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography (2216)		Drafting II DE (8531)	
SECONDARY	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Drafting III DE (8532) CAD 114	
SECONDARY	12	English DE (1160) ENG 111	Trigonometry/Math Functions (3162)	Physics (4510)	US/VA Government (2440)		Jumpstart through NRCC: CAD 120 DE, CAD 128 DE, CAD 155 DE, CAD 203 DE	
High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)								

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

Workplace Readiness Skills for the Commonwealth (CTECS)
ADDA Architectural Drafting
Autodesk Application

Additional Learning Opportunities:
CTSO Organization(s): ☐ DECA ☐ FBLA ☐ FCCLA ☐ FFA ☐ FEA ☐ HOSA x SkillsUSA ☐ TSA

Work-Based Learning:
☒ Career Research ☐ Cooperative Education ☐ Internship ☐ Mentorship
☐ Job Shadowing ☐ Service Learning Project ☐ Student Apprenticeship

Postsecondary: Placement Assessments such as COMPASS & SAT II

College Entrance Exams such as ACT & SAT

POSTSECONDARY	SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)			
	Pathway	**Associate Degree, College Certificate, or Apprenticeship**	**Bachelors Degree**	**Postgraduate Degree**
	Engineering and Technology	Computer Aided Drafting and Design	Locally Determined	Locally Determined

College: New River Community College **School Division(s):** Pulaski County Public Schools

Postsecondary: Computer Aided Drafting and Design A.A.S.

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally

Semester	English	Mathematics	Science	Social Science	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1st Semester	ENG 111 (DE) English Composition I 3 credits	MTH 115: Technical Mathematics I 3 credits		SDV 100 College Success Skills 1 credit	CAD 114 (DE): Drafting I 3 credits	CAD 120: Intro. to Graphic Representation 3 credits	ITE 115: Intro. to Computer Applications & Concepts 3 credits	MAC 131: Machine Lab I 2 credits
Year 1 2nd Semester				Health or Physical Education 1 credit	CAD 128: Geometric Dimensioning & Tolerance 3 credits	CAD 201: Computer Aided Drafting & Design I 4 credits	CAD 226: Computer Aided Machining 3 credits IND 113: Materials Processes 2 credits	CAD 238: Computer Aided Modeling & Rendering I 3 credits MAC 132: Machine Lab II 2 credits
Year 2 1st Semester	CST 137: Oral Interpretation 3 credits			Social Science Elective 3 credits	CAD 155: Fundamentals of Architectural Drafting 3 credits	CAD 202: Computer Aided Drafting and Design II 3 credits	CAD 239 Computer Aided Modeling & Rendering II 3 credits	CAD 241: Parametric Solid Modeling I 3 credits
Year 2 2nd Semester			Health or Physical Education 1 credit	Social Science Elective 3 credits	CAD 203: Computer Aided Drafting & Design III 3 credits	CAD 242: Parametric Solid Modeling II 3 credits	CAD 243: Parametric Solid Modeling III 3 credits	CAD 280: Design Capstone Project 2 credits

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:
• CAD Specialist • CAD Technician • CAD Supervisor • Electrical CAD Technician • Fixed Design CAD Technician • Machine Design CAD Technician	**Work-Based Learning:** ☒ Cooperative Education ☒ Internship ☐ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☐ Registered Apprenticeship

UNIVERSITY	
	University/College: Virginia Polytechnic Institute and State University Degree or Major: Engineering Number of Articulated CC Credits: 70

Notes:

Commonwealth of Virginia
Plan of Study

Rev: 5/18/11

Student Name: John Cougar
School: Pulaski County High School
Date:

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

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

EDUCATION LEVELS	GRADE	English/ Language Arts	Mathematics	Science	Social Studies/ Science	Other Required Courses Recommended Electives Learner Activities	Recommended Career and Technical Courses Source: Administrative Planning Guide http://www.cteresource.org/apg/	SAMPLE – Occupations Relating to This Pathway: http://www.doe.virginia.gov/instruction/career_technical/career_clusters/sample_plans_study/index.shtml http://www.careerclusters.org http://www.cteresource.org/cpg/
Graduation Requirements: http://www.doe.virginia.gov/instruction/graduation/index.shtml								Refrigeration and Air Conditioning Field Technician-HVAC Service Technician-HVAC Senior Controls Technician Commercial HVAC Service Technician
MIDDLE	7	English (1110)	Math (3111)	Life Science (3111)	U.S. History 1865 to Present (2354)	Introduction to Technology (8483)	Keyboarding (BUS 6150)	
MIDDLE	8	English (1120)	Math (3112)	Physical Science (4125)	Civics & Economics (2354)	Computer Solutions (BUS 6609) PE		
Career Assessment: Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school: VA Wizard ☒ or other assessment (please indicate): _____								
SECONDARY	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography (2215)	Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE): Economics and Personal Finance (BUS 6120) Accounting (BUS 6320) Adv Accounting (BUS 6321)	Electricity I (8533)	
SECONDARY	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography (2216)		Welding I (8672)	
SECONDARY	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Jumpstart offered through NRCC: AIR 121 DE, AIR 122 DE	
SECONDARY	12	English DE (1160) ENG 111	Trigonometry/Math Functions (3162)	Physics (4510)	US/VA Government (2440)		Jumpstart offered through NRCC: AIR 235 DE, ELE 127 DE	
High school courses in the pathway offered locally for college credit should be coded: DE (Dual Enrollment) and/or VC (Validated Credit)								

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

Workplace Readiness Skills for the Commonwealth (CTECS)
Refrigeration and Air Conditioning certificate

Additional Learning Opportunities:
CTSO Organization(s): ☐ DECA ☐ FBLA ☐ FCCLA ☐ FFA ☐ FEA ☐ HOSA x SkillsUSA ☐ TSA

Work-Based Learning:
☒ Career Research ☐ Cooperative Education ☐ Internship ☐ Mentorship
☐ Job Shadowing ☐ Service Learning Project ☐ Student Apprenticeship

Postsecondary: Placement Assessments such as COMPASS & SAT II

College Entrance Exams such as ACT & SAT

POSTSECONDARY	SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY Individual plans must include locally agreed upon courses at the postsecondary level (See page 2)			
	Pathway	**Associate Degree, College Certificate, or Apprenticeship**	**Bachelors Degree**	**Postgraduate Degree**
	Engineering and Technology	Refrigeration and Air Conditioning Certificate	Locally Determined	Locally Determined

College: New River Community College **School Division(s):** Pulaski County Public Schools

Postsecondary: Refrigeration and Air Conditioning

POSTSECONDARY - COMMUNITY COLLEGE or APPRENTICESHIP - Determined Locally

Semester	English	Mathematics	Science	Social Science	Required Courses or Recommended Electives			
POSTSECONDARY PLAN OF STUDIES MUST INCLUDE POSTSECONDARY ACADEMIC, CTE, AND OTHER ELECTIVE COURSES APPROPRIATE FOR AN ASSOCIATE DEGREE.								
Year 1 1st Semester					AIR 121: Air Conditioning and Refrigeration I 4 credits	ELE 130: Electricity 4 credits	SAF 127: Industrial Safety 2 credits	
Year 1 2nd Semester					AIR 122: Air Conditioning and Refrigeration II 4 credits	ELE 127: Residential Wiring Methods 2 credits	ELE 138: National Electrical Code Review I 2 credits	
Year 2 1st Semester					AIR 235: Heat Pumps 3 credits			
Year 2 2nd Semester								
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:**
Refrigeration and Air Conditioning certificate	**Work-Based Learning:** ☒ Cooperative Education ☒ Internship ☐ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☐ Registered Apprenticeship

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

Notes:

Appendix C – New River Community College Dual Enrollment Agreement

Dual Enrollment Contract

Between
New River Community College
and
Pulaski County Public Schools

The purpose of this agreement is to set out the terms and conditions upon which courses will be offered under the "Virginia Plan for Dual Enrollment Between Virginia Public Schools and Community Colleges" established by the Secretary of Education, the VCCS Chancellor, and the Superintendent of Public Instruction in January 2005, and revised in March 2008. The purpose of this offering is to allow high school students to take college-level courses and receive both college credit and high school credit towards graduation.

Each party does hereby agree to the following:

1. Under this agreement, New River Community College, (herein after "the College"), will make available college-level courses to students of Pulaski County Public School System for the 2012-2013 academic year.

   The courses to be offered will be established by mutual agreement of both parties for the fall and spring semesters. A list of courses can be found as Attachment 1, and are hereby incorporated into this agreement.

   The responsibilities of the parties pursuant to this agreement are conditional upon student registration for the course(s) being completed and subject to adequate student enrollment as determined by the college. The College and Pulaski County Public Schools reserve the right to cancel any class sections or add sections, no later than the census date for the class as determined by the college.

2. Tuition & Fees (See attached letter for explanation---Attachment 2.)

   Pursuant to the Virginia Plan for Dual Enrollment, schools and colleges are encouraged to provide high school students the opportunity for dual enrollment at no cost to them or their families. If tuition will be charged, then the School will pay on behalf of the student or students, or the student will pay the College, the mandatory tuition and any fees established by the State Board for Community Colleges at the rate then in effect at the time the classes begin. Where the School agrees to pay the tuition and fees, the College will bill the School on a semester basis. If the parties agree the students are responsible for such payments, the College will bill the students directly for them.

3. Textbooks

   The College reserves the right to determine the textbooks used in dual enrollment courses. The provision of all dual enrollment course textbooks is the responsibility of the Pulaski County Public Schools.

4. Payment for Other Services (not applicable)

Fees and reimbursement for other costs and services will be determined by mutual consent of the School/System and the College.

5. Faculty

a. Selection

(1) Authority to Select/Hire

The selection and supervision of instructional faculty for all community college courses covered by this agreement will be the responsibility of the College. Pulaski County Public Schools may recommend qualified teachers who are interested in teaching in the dual enrollment program to the College for consideration. Each faculty member teaching in the dual enrollment program shall be a member of the college's full-time or part-time faculty or an employee of the Pulaski County Public School System.

(2) Dual enrollment course faculty must meet the minimum credential requirements set forth by Form VCCS-29 (Attachment 3) and the Southern Association of Colleges and Schools.

b. Payment (See attached letter for explanation---Attachment 2.)

If the instructor for dual enrollment course(s) is employed full time by ___(School/System)___ and the course(s) are part of the assigned teaching workload, the College may reimburse the ___(School/System)___ for the services of its employee in lieu of direct compensation to the faculty member. If, however, the College employs an instructor that is not affiliated with the ___(School/System)___, the College will compensate the faculty member directly. Reimbursement and/or payment of faculty salaries directly will be in accordance with the Virginia Community College System approved lecturer rates depending on qualifications of the instructor and will occur no later than the end of the semester of the course. Other reimbursement procedures, mutually agreeable to both the college and the school division, can also be implemented as an alternative if evidenced in writing.

c. Faculty Responsibilities

(1) Instructors will be expected to conform to college policies for the dual enrollment courses they teach, such as preparing course syllabi, verifying class rosters, reporting student progress to the college at mid-semester, taking attendance, and providing final grades at the end of the semester.

(2) Evaluation

i. Instructor Evaluation-- The community college will conduct faculty evaluations for dual enrollment instructors using the college guidelines adopted for all adjunct faculty. A copy of the observation results will be submitted to the designated school division representative.

ii. Student Evaluation - Student evaluations on all dual enrollment adjunct instructors will be conducted each semester for each course offered through the dual enrollment program. Results of the student evaluations will be compiled and shared with the Dean, Program Lead, faculty, and designated school division representative

6. Students

a. Selection and Eligibility to Participate in Dual Enrollment Program

(1) In order to be eligible to participate in the Dual Enrollment Program, high school students must have permission of their parent or guardian to participate, be recommended by their high school principal to cross register, and meet course prerequisites.

(2) Students must meet admission and course placement requirements of the college. Requirements for admission include the completion of and application for admission to the college, transcript request forms, and the completion and receipt of satisfactory scores on the college's placement tests when required.

(3) Exceptions to the policies established in 6.a.(1) and 6.a.(2) regarding student eligibility may be made on a case-by-case basis with the approval of the public school superintendent and appropriate community college officials, so long as such exceptions are in accordance with the VCCS Policy Manual.

b. All dual enrollment students must adhere to policies within the VCCS Policy Manual, unless specifically noted in this agreement.

7. College Administrative Responsibilities

a. The College, through its instructor(s), will provide the appropriate Pulaski County Public School officials with progress reports on each student from time to time as shall be agreed by the contracting School System and College. At the conclusion of each college academic term, the student will receive a college grade for each course in which he/she was registered and such grades will become part of the student's permanent college record.

b. A record will be maintained by the College for each student in the Dual Enrollment Program as a part of the permanent college record maintained by the College's

Admissions and Records office. The College will send transcripts to colleges/universities upon a student's request.

c. The College will provide a minimum of 750 minutes of instruction (to include testing and evaluation) for each lecture credit or lab contact hour per semester to Pulaski County Public School System students enrolled in college courses under this agreement.

8. High School Administrative Responsibilities

Pulaski County Public Schools will verify enrollments in each class section, and instructors will report grades to the College within a prescribed period of time, according to established college procedures.

9. Award of Credit

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

10. Course Standards

a. Course Equivalency, Evaluation, and Assessment

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

b. Modifications of Policies

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

c. Student Performance

The College reserves the right to advise the student, parents, and School System that the student does not have sufficient skills or abilities to continue in the courses selected after the first semester.

11. Agreement Contacts

Contact persons for this agreement are:

- the School System: _____

- the School:
- the College: Pat Huber, Carol Hurst, Dan Lookadoo

12. Transferability

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

13. The College reserves the right to enroll other students in the courses subject to this contract when those courses are offered on the College's campus or sites not at the high school.

14. Each party will be responsible for liability coverage of its employees and agents in fulfilling its responsibilities under this agreement, to the extent authorized by law.

15. If either party wishes to terminate this agreement, a written notice must be provided to the other party within [*] days of the requested termination date. Termination will not take place until dual enrollment courses in progress are completed.
    *The number of days should be negotiated between the School/System and the Community College.

16. The College or the Pulaski County Public Schools shall not unlawfully discriminate on the basis of race, nationality, ethnicity, religion, gender, age, or disability in any undertaking pursuant to this contract. Disabled students will continue to receive accommodations through the School pursuant to the Individuals with Disabilities Education Improvement Act of 2004, 20 U.S.C § 1400.

17. Nothing herein shall be construed as a waiver of the sovereign immunity of the Commonwealth of Virginia or the assumption of any liability contrary to Virginia law.

Signatures:

By: _____ 2-12-13
Dr. Jack M. Lewis, President — Date
New River Community College

_____ 2-5-13
Dr. Thomas Brewster, Superintendent — Date
Pulaski County Public Schools

Appendix D – Pulaski County Governor's STEM Academy Planning/Advisory Committee Agreements

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Peter Anderson

Title: Hite Grant Administrator

Affiliation: NRCC

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature

2/11/13
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Dan Lookadoo

Title: Dean Business and Technologies

Affiliation: New River Community College

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Dan L. Lookadoo 2/11/13

Signature Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Deborah D. Kennedy

Title: Enrollment Management & Career Pathways Coordinator

Affiliation: NRCC

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Signature

2-11-13
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Mary Cheverton

Title: Guidance Counselor

Affiliation: Pulaski County High School

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Mary Cheverton
Signature

2/11/13
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Deborah L. Hodges

Title: Central Office Liaison - Coordinator of Instructional Technology + Academic Support

Affiliation: Pulaski County Public Schools

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Deborah L. Hodges — 2-11-13

Signature — Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Ross Matney

Title: C.T.E. Director

Affiliation: Pulaski County Public Schools

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature

2-11-13
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Thomas Brewster

Title: Superintendent

Affiliation: Pulaski County Public Schools

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature

2-12-13
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Gregory Brown

Title: Assistant Superintendent

Affiliation: Pulaski County Public Schools

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature _____ Date 2/12/13

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Michael Myers

Title: Principal

Affiliation: Pulaski County High School

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Michael S. Myers
Signature

2/13/2013
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: JOE GUTHRIE

Title: Instructor

Affiliation: Virginia Tech

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Joseph W Guthrie
Signature

2/15/13
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Ron Nichols

Title: Director of Operations

Affiliation: Pulaski County Public Schools

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature

2/14/2013
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Chris Stafford

Title: Director of Finance

Affiliation: Pulaski County School Board

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature _____ Date 2/15/13

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: Peggy White

Title: Executive Director

Affiliation: Pulaski County Chamber of Commerce

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature

2-18-13
Date

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Planning/Advisory Committee Certification
Pulaski County Governor's STEM Academy

Planning/Advisory Committee Member

Name: SHAWN UTT

Title: COMMUNITY DEVELOPMENT DIRECTOR

Affiliation: PULASKI COUNTY ADMISTRATION

The Planning/Advisory Committee is an integral component of the Pulaski County Governor's STEM Academy. Each member brings to the committee a unique perspective as to both the curricular needs of the Governor's STEM Academy and the workforce needs of both present and future employers in Pulaski County. My signature below certifies my willingness to actively participate on the Planning/Advisory Committee for the proposed Pulaski County Governor's STEM Academy.

Signature

2-19-13
Date

Appendix E – Internship Forms

Pulaski County Governor's STEM Academy
Internship Agreement

Student's Name: _____ Date: _____

Internship Workplace Site (organization and section or department):

_____

Description of Internship Work Assignment: _____

_____

Start Date: _____End Date: _____

Total Hours of Supervised Internship: _____

The overall goals of the Pulaski County Governor's STEM Academy are to provide students with 21st century, STEM-enriched technological skills and knowledge necessary to succeed in postsecondary education and in the world of work. One way to accomplish this is by acquiring work-based learning experiences through internships with local partners from business and industry.

The Student Intern agrees:

1. To establish good attendance habits through regular school and internship site attendance. The student intern will notify the school and internship site by a designated time on any day absent. Without permission from the Internship Program Educator, no student may report to the internship site without first reporting to school.
2. To represent the Pulaski County Governor's STEM Academy in a professional manner by showing honesty, punctuality, courtesy, a cooperative attitude, proper health and grooming habits, appropriate dress, and a willingness to learn.
3. To perform all internship responsibilities in a professional manner and to conform to all rules and regulations, including all safety requirements of the internship site.
4. To consult the Internship Program Educator about any changes or difficulties arising at the internship site or related to the internship experience.

_____ _____

Student Intern Signature Date

Internship Site Mentor agrees:

1. To provide a variety of work-related experiences for the Student Intern that will expose the student to as many different aspects of the operations at the internship site as possible.
2. To assist Student Interns in completing job-related projects, furnishing available instructional materials, and providing worksite guidance and encouragement.
3. To adhere to state and federal regulations regarding labor laws and safety regulations.
4. To provide time for consultation with the Internship Program Educator concerning the Student Intern's progress and for evaluation of the Student Intern's on-the-job performance.
5. To consult the Internship Program Educator as soon as possible regarding work-related problems.

_____ _____

Internship Site Mentor Signature Date

Internship Program Educator agrees:

1. To work with the Internship Site Mentor to create work-related activities for the Student Intern.
2. To keep the Internship Site Mentor informed of all responsibilities and regulations in regard to the internship experience.
3. To make scheduled visits throughout the internship experience in order to consult with the Internship Site Mentor, observe the Student Intern, and to offer any needed assistance with problems concerning the Student Intern.
4. To provide in-school instruction including safety procedures and activities that relate to the Student Intern's placement and career pathway objectives.
5. To work with the Internship Site Mentor to evaluate Student Interns.

_____ _____

Internship Program Educator Signature Date

Parent/Guardian of the Student Intern agrees:

1. To support the Pulaski County Governor's STEM Academy's goal of establishing good attendance habits in all student interns. Parents need to be aware that without permission from the Internship Program Educator, no student may report to the internship site without first reporting to school.
2. To cooperate with all rules and regulations of the school division, Pulaski County Governor's STEM Academy, and internship site.
3. To encourage the student intern to carry out his/her internship duties and responsibilities in a professional manner.
4. To communicate questions or concerns about the student intern with the Internship Program Educator rather than directly to the Internship Site Mentor.
5. To be responsible for the transportation of the student intern to and from the internship site.

_____ _____

Parent/Guardian of the Student Intern Signature Date

_____ _____

Pulaski County Governor's STEM Academy Director Signature Date

Pulaski County Governor's STEM Academy
Parent/Guardian Consent Form and Medical Authorization

Please complete all blanks and sign in *three* places.

Student's Name: _____

Part I: Permission to Participate

I have read the information concerning the internship program and give my son/daughter, _____, permission to participate in the program. I realize that each student must provide his/her own transportation to and from the internship workplace site. I also understand that my son/daughter must meet all requirements in order to be accepted into the program.

_____ _____

Parent/Guardian Signature Date

Part II: Medical Authorization

Should it be necessary for my son or daughter to have medical treatment while participating in the internship program and I cannot be reached, I hereby give the school district and workplace personnel permission to use their best judgment in obtaining medical service for my son/daughter, and I give permission to the physician selected by the school division personnel to render whatever medical treatment he or she deems necessary and appropriate. Permission also is granted to release necessary emergency contact information and medical history to the attending physician or to the workplace, if needed.

_____

Student's Name

_____

Address

_____

Date of Birth Home Telephone

_____

Daytime Phone Contact Information for Parent/Guardian

_____

Contact Other Than Parent/Guardian Relation to Student Telephone

_____

Family Doctor Telephone

_____

Preferred Hospital Telephone

Does your son or daughter require any special accommodations because of medical limitations, disability, or other restrictions? _____ If so, please explain.

_____

Are there medications that your son/daughter must have during the time of internship? If so, please list.

_____

Does your son/daughter have any allergies? If so, please list.

_____

Insurance Data:
Does student intern have health/medical/accident insurance? _____ Yes _____ No

Name of insurance company providing individual or family medical coverage:

_____

Policy Number: _____

_____ I hereby agree to all of the above authorizations and permissions.

_____
Parent/Guardian Signature Date

Part III: Liability
I hereby agree to waive and release any and all rights that I, my child, or our representatives may have to make claim against Pulaski County Public Schools or their respective officers, employees, or representatives arising from injury or damages, including attorney's fees, that may result from my child's participation in the internship program.

I further agree to indemnify and hold harmless the public schools or their respective officers, employees, or representatives from any claims, including attorney's fees, which I or my child might make or which might be made on my or our behalf by others, or which might be made against me or my child by others, arising from my child's participation in the internship program.

_____
Parent/Guardian Signature Date

Pulaski County Governor's STEM Academy
Student Intern Evaluation Form

Intern's name: _____ Date: _____

Workplace organization: _____ Internship dates: _____

Supervisor's name and position: _____

Part I. Intern's work habits, duties, and responsibilities:

Supervisor's Rating

Learning Objectives	Advanced	Proficient	Competent	Needs Improvement

Part 2: Please answer the statement on this page as completely as possible.

Internship Site Mentor's comments on the student intern's work performance and work habits:

Internship Site Mentor Signature

Date

Pulaski County Governor's STEM Academy
Student Internship Log

Date	Time In	Time Out	Activity Description	Total Activity Time (Hours)	Internship Site Mentor's Initials

Total Time Spent on Internship (Hours): _____

_____ _____
Student Intern Signature Date

_____ _____
Internship Program Educator Signature Date

Appendix F – Pulaski County Governor's STEM Academy Student Application

Pulaski County Governor's STEM Academy
Student Application

The overall goals of the Pulaski County Governor's STEM Academy are to provide students with 21st century, STEM-enriched technological skills and the knowledge necessary to succeed in postsecondary education and in the world of work. This will be accomplished through authentic, rigorous, project-based work while building partnerships with parents and community and business leaders to meet these goals.

The Pulaski County Governor's STEM Academy will provide academic content concentrating on three career pathways: Engineering and Technology, Production, and Construction. Student learning and achievement will be enhanced through the integration of core academics, STEM curriculum, applied technology, and increased participation in career and technical student organization leadership events.

Students must meet the following criteria to be selected for the Pulaski County Governor's STEM Academy:

- Recommendation from a teacher, school counselor, school administrator, or Academy director
- Complete a Pulaski County Governor's STEM Academy application
- Passing scores on the highest level attained on the English and mathematics Standards of Learning tests
- Complete the New River Community College online application

Students who are selected for the Academy will be required to meet the following criteria to complete the program successfully:

- Maintain a minimum 2.5 overall grade-point average
- Recommendation from the Academy program area teacher
- Successfully complete the necessary dual enrollment placement test
- Complete dual enrollment credit courses and earn a "C" or better in the course
- Passing scores on the highest level attained on the English and mathematics Standards of Learning tests
- Complete courses within a specific pathway in the STEM Engineering and Technology, Manufacturing, and Architecture & Construction Career Clusters
- Achieve one or more of the following: an industry certification, at least nine transferrable college credits, or an Associate Degree;
- Complete school/community service
- Adhere to the student code of conduct and attendance policies

For more information contact:
Mr. Ross Matney
Pulaski County Governor's STEM Academy Director
5414 Cougar Trail
Dublin, VA 24084
rmatney@pcva.us
540-643-0596

Pulaski County Governor's STEM Academy
Student Application

Pulaski County High School
5414 Cougar Trail
Dublin, VA 24084

Student's Last Name **First Name** **Middle Name** **Preferred Name**

Student's Street Address **City** **State** **Zip Code**

Grade Level **Student ID Number** **Birth Date** **Gender (M or F)**

Mother's/Guardian's Name **Father's/Guardian's Name**

Home Telephone # **E-mail Address**

Mother's Work # **Mother's Cell #**

Father's Work # **Father's Cell #**

Student STEM Essay
Directions:

On a separate sheet of paper, type or neatly print a brief essay of approximately 350 words describing your reasons for applying to the Pulaski County Governor's STEM Academy. Please include in your essay the pathway that you intend to pursue and why you chose that pathway (Engineering and Technology, Production, or Construction). Please make sure that your essay is original, well thought-out, organized, and grammatically correct. The essay must be attached to this application.

Faculty Recommendation

Student Directions: Complete the designated parts of this form. Be sure to allow at least one week for the teacher to complete the recommendation.

To Be Completed by Student

Student Name: _____
Grade Level: _____
Student ID Number: _____

To Be Completed by Faculty Member Making Recommendation

Please rate the student in the following categories by circling the appropriate number. Please return the completed recommendation to Mary Cheverton, Pulaski County Governor's STEM Academy counselor.

	Excellent	Above Average	Average	Below Average	Not Observed
1. Has a strong work ethic	1	2	3	4	5
2. Demonstrates good study skills and work habits.	1	2	3	4	5
3. Completes written work with attention to detail.	1	2	3	4	5
4. Works well with other students and teachers	1	2	3	4	5
5. Establishes and accomplishes goals	1	2	3	4	5
6. Communicates effectively	1	2	3	4	5
7. Accepts criticism and strives for improvement	1	2	3	4	5
8. Accepts responsibility for own actions	1	2	3	4	5
9. Persists when problem solving	1	2	3	4	5
10. Has math and science aptitude and potential for successful study of both	1	2	3	4	5

Comments:

1. Briefly describe the student's potential for success at the Pulaski County Governor's STEM Academy.

2. Please **add any additional comments about the student that** you may wish to share with the selection committee.

Overall Faculty Member Recommendation

_____ Recommend _____ Highly Recommend _____ Recommend with Reservations _____ Do Not Recommend

_____	_____	_____
Signature	**Subject Area**	**Date**

Appendix G – Liability Insurance Certificate and Certificate of Property Insurance

CERTIFICATE OF LIABILITY INSURANCE

Date MM/DD/YY
January 28, 2013

PRODUCER: Virginia School Boards Association
Property & Casualty Pool
200 Hansen Road
Charlottesville, VA 22911

THIS CERTIFICATE CONSTITUTES AN ENDORSEMENT TO THE POLICY AND THE CERTIFICATE HOLDER IS FULLY PROTECTED UNDER THE POLICY AS ANY OTHER ADDITIONAL INSUREDS.

INSURED: Pulaski County Public Schools
202 N. Washington Avenue
Pulaski, VA 24301

INSURERS AFFORDING COVERAGE	
Company A	VSBA Property & Casualty Pool
Company B	VSBA Workers' Comp Group
Company C	Academic Benefits Trust
Company D	CNA

Coverages THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE	POLICY EXPIRATION DATE	LIMITS
	☐ Any Auto ☐ Hired Autos ☐ All Owned Autos ☐ Non-owed Autos ☐ Scheduled Autos				
A	GENERAL LIABILITY - OCCURRENCE FORM	VSBA 082-GL	7/1/2012	6/30/2013	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 $2,000,000
A	PROPERTY ☐ Causes of Loss ☐ Basic ☐ Broad ☐ Special ☐ Flood	VSBA 082-PR	7/1/2012	6/30/2013	Blanket Bldg & PP $139,224,949,
A	EXCESS LIABILITY	VSBA 082-EX	7/1/2012	6/30/2013	Limit of Coverage $4,000,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS: EVIDENCE OF COVERAGE

CERTIFICATE HOLDER:
Virginia Department of Education
101 North 14th St.
Richmond, VA 23219

CANCELLATION
Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail 90 days written notice to the certificate holder named to the left, but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives.

AUTHORIZED REPRESENTATIVE: David B. Smith

Appendix H – Budget

GOVERNOR'S STEM ACADEMY

START-UP BUDGET

A – Director Costs	TOTAL			
	$5,000 Grant State Funds	Perkins Funds	Other Funds (Local or grant funds to be described in Budget Narrative)	In-Kind
1. Personnel --- 1000				$172,331.01
2. Employment Benefits --- 2000				$52,077.00
3. Purchased/Contractual Services ---- 3000		$1, 000.00		
4. Internal Services ---- 4000				
5. Staff Development ---- 5000		$2,000.00		
6. Summer Component Activities ---- 5000				
7. Travel ---- 5000				
8. Contractual Services ---- 5000				
9. Materials and Supplies ---- 6000	$5,000.00			$5,000.00
10. Equipment ---- 8000		$20,000.00		
11. Facilities ---- 8000		$10,000.00		
B – Indirect Costs *				
TOTAL	$5,000.00	$33,000.00		$229,408.01

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

Appendix I - Partnership Capacity/Memorandum of Agreement

Partners
Pulaski County Governor's STEM Academy

Name	Title	Company
John Maxwell	Group Manager	Caterpillar
J.D. Price	Vice President	OWPR Inc.
Jerry Jones	President	Appalachian Machine Inc.
Edgar Farmer	Secretary/Treasurer	Appalachian Machine Inc.
Peter Huber and Dr. Thomas Brewster	County Administrator and Superintendent	Joint Services for Pulaski County
Robert L. Pack	Chairman of the Board	Habitat for Humanity New River Valley
William Barnett	General Manager	BAE Systems

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Partnership Agreement
Between
Pulaski County Public Schools
and
The Pulaski County Governor's STEM Academy Partners

Pulaski County Public Schools and the undersigned partner agree to work together to provide students with 21st century, STEM enriched technological skills and knowledge necessary to succeed in postsecondary education and in the world of work in STEM fields.

Pulaski County Public School Partners agree to:

- Help identify the employment needs and opportunities in Pulaski County STEM industries.
- Provide guidance in the development of curriculum and course offerings relating to the Pulaski County Governor's STEM Academy.
- Provide opportunities when possible for mentorships, job shadowing, and internships as appropriate for Pulaski County Governor's STEM Academy students.
- Provide opportunities for site visits when possible to expose students to actual work settings and employees.
- Participate as possible in STEM activities and programs that further the goals of the Pulaski County Governor's STEM Academy.

Pulaski County Public Schools Agrees to:

- Establish, finance, and manage the Pulaski County Governor's STEM Academy.
- Designate a Pulaski County Governor's STEM Academy point of contact for partners.
- Provide partners with a listing of possible partnership activities and programs.
- Offer courses and dual enrollment opportunities in the three career pathways: Engineering and Technology, Production, and Construction.
- Provide a Pulaski County Governor's STEM Academy overview, tour, or orientation to partners as needed.

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

Pulaski County Governor's STEM Academy

Academy Director — Date: 2-18-2013

CATERPILLAR INC
Name of Partner Organization

Signature — Date: 2/15/2013

GROUP MANAGER
Title

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Partnership Agreement
Between
Pulaski County Public Schools
and
The Pulaski County Governor's STEM Academy Partners

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- **Provide guidance in the development of curriculum and course offerings relating to the Pulaski County Governor's STEM Academy.**
- **Provide opportunities when possible for mentorships, job shadowing, and internships as appropriate for Pulaski County Governor's STEM Academy students.**
- **Provide opportunities for site visits when possible to expose students to actual work settings and employees.**
- **Participate as possible in STEM activities and programs that further the goals of the Pulaski County Governor's STEM Academy.**

Pulaski County Public Schools Agrees to:

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- **Designate a Pulaski County Governor's STEM Academy point of contact for partners.**
- **Provide partners with a listing of possible partnership activities and programs.**
- **Offer courses and dual enrollment opportunities in the three career pathways: Engineering and Technology, Production, and Construction.**
- **Provide a Pulaski County Governor's STEM Academy overview, tour, or orientation to partners as needed.**

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

Pulaski County Governor's STEM Academy

_____ 2-15-13

Academy Director **Date**

OWPR Inc

Name of Parther Organization

_____ 2/15/13

Signature **Date**

Vice-President OWPR Inc

Title

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Partnership Agreement
Between
Pulaski County Public Schools
and
The Pulaski County Governor's STEM Academy Partners

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- **Provide partners with a listing of possible partnership activities and programs.**
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- **Provide a Pulaski County Governor's STEM Academy overview, tour, or orientation to partners as needed.**

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

Pulaski County Governor's STEM Academy

Jim McCoy — 2-15-13

Academy Director — **Date**

Appalachian Machine Inc

Name of Partner Organization

Jerry E Jones — 2/15/2012

Signature — **Date**

President

Title

Pathways to Success

STEM

Science • Technology • Engineering • Mathematics of Pulaski

Partnership Agreement
Between
Pulaski County Public Schools
and
The Pulaski County Governor's STEM Academy Partners

Pulaski County Public Schools and the undersigned partner agree to work together to provide students with 21st century, STEM enriched technological skills and knowledge necessary to succeed in postsecondary education and in the world of work in STEM fields.

Pulaski County Public School Partners agree to:

- **Help identify the employment needs and opportunities in Pulaski County STEM industries.**
- **Provide guidance in the development of curriculum and course offerings relating to the Pulaski County Governor's STEM Academy.**
- **Provide opportunities when possible for mentorships, job shadowing, and internships as appropriate for Pulaski County Governor's STEM Academy students.**
- **Provide opportunities for site visits when possible to expose students to actual work settings and employees.**
- **Participate as possible in STEM activities and programs that further the goals of the Pulaski County Governor's STEM Academy.**

Pulaski County Public Schools Agrees to:

- **Establish, finance, and manage the Pulaski County Governor's STEM Academy.**
- **Designate a Pulaski County Governor's STEM Academy point of contact for partners.**
- **Provide partners with a listing of possible partnership activities and programs.**
- **Offer courses and dual enrollment opportunities in the three career pathways: Engineering and Technology, Production, and Construction.**
- **Provide a Pulaski County Governor's STEM Academy overview, tour, or orientation to partners as needed.**

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

Pulaski County Governor's STEM Academy

_____ 2/15/13
Academy Director **Date**

Appalachian Machine Inc.
Name of Partner Organization

_____ 2/15/13
Signature **Date**

Sec. Treas.
Title

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Pulaski County Governor's STEM Academy

_____ 2-19-13

Academy Director **Date**

Pulaski County Bd of Supervisors Pulaski County School Board

Name of Partner Organization

_____ 2/19/2013

Signature **Date**

County Administrator

Title

FAX #: 540-674-5242
ATTN: ROSS MATNEY

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Pulaski County Governor's STEM Academy

_____ 2/19/13
Academy Director **Date**

HABITAT FOR HUMANITY NEW RIVER VALLEY
Name of Partner Organization

Robert L. Pack 2/19/13
Signature **Date**

CHAIRMAN OF THE BOARD
Title

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Pulaski County Governor's STEM Academy

Academy Director — **Date** 2/26/13

BAE Systems
Name of Partner Organization

Signature — **Date** 26 FEB 13

General Manager
Title

Appendix J - Brochure

Opening future pathways at the STEM Academy

Governor's STEM Academy
Pulaski County High School
Career & Technical Education Center

The program at PCHS CTE Center focuses on Science, Technology, Engineering and Mathematics, Welding, HVAC, and Electricity. Student learning and achievement are enhanced through integration of academics, STEM curriculum, applied technology, and increased participation in student organizations.

Partners: Pulaski County Public Schools and New River Community College. Please view http://stem.pcva.us/ the stem website for business partners.

Academy Goals & Description: The Pulaski County Governor's STEM Academy will provide rigorous academic content concentrating on three career pathways: Engineering and Technology, Production, and Construction. Students learning and achievement will be enhanced through the integration of academics, STEM curriculum, applied technology, and increased participation in career and technical student organization leadership events.

Specific Governor's STEM Academy objectives include:

•Improve academic achievement of Academy students by increasing academic rigor and relevance within selected pathways.

•Increase completion of dual enrollment courses.

•Provide workplace readiness experiences through strong partnerships with businesses.

•Increase high school graduation rates.

•Reduce dropout rates.

•Increase enrollment and retention in postsecondary education.

•Increase the numer of industry certifications awarded to high school students.

•Reduce the number of students requiring remediation in college.

•Increase the number of graduates employed in high-wage, high-skilled careers.

Highlights of the Academy: As a result of participation in the Pulaski County Governor's STEM Academy in the pathways of Engineering and Technology, Production, and Construction students will:

•Gain a deeper understanding of the skills and knowledge incorporated in their fields of study.

•Benefit from specialized, project-based courses which develop critical thinking, problem solving, and decision-making skills preparing them for the 21st century world of work.

•Acquire greater communication skills.

•Develop workplace readiness skills.

•Receive opportunities to earn industry certifications preparing them to be more competitive in the workforce and when applying to advanced training schools or postsecondary education.

•Obtain meaningful, real-life, hands-on experiences in their career pathway.

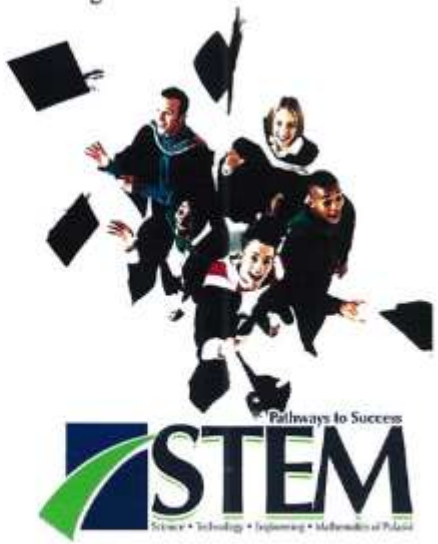
•Profit from opportunities for internships, mentorships, and cooperative education, which provide students with advantages when entering postsecondary education and or the workplace.

Initial Course Offerings:

Production:
- Welding I
- Welding II - Dual Enrollment
- Welding III - Dual Enrollment

Construction:
- Electricity I
- Electricity II
- Electricity III - Dual Enrollment

Engineering and Technology:
- Drafting I
- Drafting II
- Drafting III - Dual Enrollment
- Technology Foundations
- Materials and Processes Technology
- Engineering Exploration
- Engineering Analysis and Applications II
- HVAC through NRCC



Science • Technology • Engineering • Mathematics

Appendix K – Statement of Assurances

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

STATEMENT OF ASSURANCES

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

1. The planning committee has reviewed the provisions of *Administrative Procedures Guide for the Establishment of Governor's STEM Academies* outlined in the Guidance Document, and understands that an implementation proposal will need to address these criteria and/or others approved by the Virginia Board of Education.

2. The planning committee agrees to follow the guidelines set forth in the *Administrative Procedures Guide for the Establishment of Governor's STEM Academies* document.

3. If the Governor's STEM Academy will be a jointly-operated program, an ongoing governing board will be established or maintained to reflect current Board of Education regulations relative to jointly-operated schools and programs.

4. A public, government entity will serve as the grant fiscal agent.

Certification by Authorized or Institutional Official:

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

Thomas N. Brewster
Typed or Printed Name of Authorized Official

Superintendent
Title

Signature of Authorized Official

2-5-13
Date