Virginia Board of Education Agenda Item

Agenda Item: **Date:** July 27, 2017

Title	Final Review of Proposal to Establish the Governor's STEM Academy at Osbourn High School, Manassas City Public Schools		
Presenter	Ms. Lolita B. Hall, Director, Office of Career, Technical, and Adult Education		
E-mail	LB.Hall@doe.virginia.gov	**Phone**	804-225-2051

Purpose of Presentation:
Action required by Board of Education regulation.

Previous Review or Action:
Previous review and action. Specify date and action taken below:

Action Requested:
Final review: Action requested at this meeting.
July 27, 2017

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 Governor's STEM Academy must meet rigorous criteria established by the Board of Education. The students' progress in academic, employability, and technical knowledge and skills are monitored and measured annually to ensure successful transition from high school to further education and careers.

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.

An executive summary of the proposal is in Attachment A. The State Council of Higher Education for Virginia (SCHEV) is currently reviewing the Academy proposal (Attachment B). The Virginia Department of Education (VDOE) specialists have also reviewed the proposal in the context of the established criteria. Attachment C is the report from the review by the VDOE. Attachment D is the complete proposal.

Currently, there are 21 Governor's STEM Academies in Virginia. They are located in Arlington County, Carroll County, Chesapeake City, Chesterfield County, Fairfax County (two), Halifax County, Hampton City, Harrisonburg City, Loudoun County, Lynchburg City, Montgomery County, New Kent County, Newport News City, Pulaski County, Richmond City, Richmond County, Roanoke County, Russell County, Stafford County, Suffolk City, and Virginia Beach City.

Summary of Important Issues:
The proposed Governor's STEM Academy at Osbourn High School, Manassas City Public Schools will provide rigorous academic and technical STEM coursework concentrating in the following three career clusters and pathways:

CAREER CLUSTER	CAREER PATHWAY
Science, Technology, Engineering, and Mathematics (STEM)	**Engineering and Technology**
Information Technology	**Networks Systems**
Transportation, Distribution, and Logistics	**Facility and Mobile Equipment Maintenance**

The Academy will have the capacity to enroll 140 students, grades 9-12. During the initial school year (2017-2018) 35 students will be admitted.

Virginia has identified key industries of the 21st century that includes STEM-related fields such as Aerospace, Information Technology, and Automotive (Virginia Economic Development Partnership, 2016). Many businesses that are leaders in these industries are located in Manassas City. In the Washington, D.C. metro area, there are projected to be more than 700,000 jobs related to STEM, representing 27 percent of the regional job market. With the projected increase in the number of skilled jobs in Virginia, the Academy will provide skilled employees to the local workforce which will support local and state economic development.

Students that follow the *Engineering and Technology Pathway* will develop knowledge and skills and the ability to apply mathematics, sciences, and technology concepts to solve problems that exist throughout a broad range of fields.

Network Systems connect people and information. Students enrolled in this pathway will learn how to design, install, maintain, and manage network systems for businesses and other facilities. This field requires a solid foundation in mathematics and science as well as high-tech skills.

In *Facility and Mobile Equipment Maintenance Pathway*, students will maintain, repair and service vehicles and transportation facilities. They will use research skills to learn the most efficient, safe, cost-

effective, and environmentally friendly ways to operate equipment and machinery.

The Academy students' learning experiences and achievement will be enhanced through strong partnerships that include Able Moving & Storage, Inc., Aurora Flight Sciences, Aviation Institute of Maintenance, George Mason University, Infinite Printing, Lockheed Martin, Micron Technology, Inc., Miller Toyota, Northern Virginia Checker Cab, Northern Virginia Community College (NOVA), Northrop Grumman, Prince William County-Greater Manassas Chamber of Commerce, Project Mend-A-House, Twin Air LLC, The Aerospace Corporation, Impacto Youth, Cowork LLC/DBA Centerfuse, The Anderson Company, and Manassas Regional Airport.

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 Governor's STEM Academy at Osbourn High School, Manassas City Public Schools, is school year 2017-2018.

Superintendent's Recommendation:
The Superintendent of Public Instruction recommends that the Board of Education approve the proposal to establish the Governor's STEM Academy at Osbourn High School, Manassas City Public Schools.

Rationale for Action:
The Governor's STEM Academy at Osbourn High School, Manassas City Public Schools, meets the Board's Academy goals to—

- maximize opportunities in preparing students for targeted careers, by breaking down barriers between traditional core academics and career and technical education; between high school and postsecondary education and training; and between education and the workplace;
- raise student aspirations and attract more students to postsecondary education in preparation for technical careers; and
- provide well-trained workers to support the recruitment of new businesses and industries to the Commonwealth and to meet the workforce needs of business and industry.

Manassas City Public Schools
Governor's STEM Academy at Osbourn High School

Executive Summary
July 7, 2017

Partnership Members:	Manassas City Public Schools, Able Moving and Storage, Aurora Flight Sciences, Infinite Printing, Lockheed Martin, Micron Technology, Northern Virginia Checker Cab, Northern Virginia Community College, Twin Air, Impacto Youth, Cowork LLC/DBA Centerfuse, The Anderson Company, and Manassas Regional Airport.
Lead Entity and Fiscal Agent:	Manassas City Public Schools
Contact Person:	Susan McNamara, Supervisor K-12 Career and Technical Education Manassas City Public Schools P. O. Box 520 Manassas, VA 20108-0520 571 377-6067 (office) 703-257-8801 (fax) smcnamara@mcpsva.org
Academy Location:	Osbourn High School
Number Students:	The Governor's STEM Academy will have the capacity to enroll 140 students, grades 9 – 12. During the initial school year (2017–2018) 35 students will be admitted.
Career Pathways:	Engineering and Technology Network Systems Facility and Mobile Equipment Maintenance
Academy Goals and Performance Measures:	The goal of the Manannas City Public Schools Governor's STEM Academy is to promote student achievement and interest in STEM-related career fields that prepares students for global competitiveness in high-skill, high-wage, and high-demand STEM careers. The following program goals and performance measures have been established by the Planning/Advisory Committee: • Goal 1: Student Achievement ○ The end-of-course Algebra I and Reading pass advanced rate will increase by 2

percent each year.
  - Teachers will create a more rigorous curriculum in reading and mathematics by participating in ongoing training in higher-order thinking strategies and questioning techniques through the Learning Focused Instructional Framework.
  - Beginning in the 2017 school year, OHS will increase the number of students enrolled in dual-enrollment courses by 2 percent each year.
  - Beginning in the 2017 school year, OHS will increase the graduation rate by .5 percent each year.
  - Beginning in the 2017 school year, OHS will decrease the dropout rate by 2 percent each year.
  - The CTE supervisor will monitor the credential and certification exams for The Academy's remediation plan.
  - The 2017-18 school year certification test data will provide the baseline that will be assessed to determine the annual test score increase between 2 to 5 percent, within the three Academy pathways.
- Goal 2: Learning Environment
  - Based on students' plans of study, school counselors and teachers will collaborate regarding student progress to guide decisions in course scheduling.
  - OHS will provide all students in The Academy with workplace readiness experience prior to high school graduation.
  - The CTE Department will include internships, job shadowing, and enrichment programs in the summer that will expose students to local businesses and experiential learning.
  - Teachers and school counselors will monitor progress of struggling students and student school engagement through the school division learning management system.
  - Teachers and school counselors will provide academic interventions and further community support to work with students and families to ensure on-time high school graduation.
  - All students will meet with their Professional School Counselor two times per year to discuss personal goal setting, academic planning, and career planning.
  - Counselors will meet with all seniors during the first month of the academic school year to assess on time graduation achievement and post-secondary opportunities/plans.
- Goal 3: Program Effectiveness
  - OHS will increase the number of students enrolling in higher education by 2 percent a year.
  - Teachers and school counselors will work with AVID teachers and tutors to provide students with requisite knowledge and understanding of enrollment in postsecondary institutions and requirements for admission.
  - In conjunction with the end of year VDOE completer survey, The Academy will create an online survey to use as the protocol to follow students to their postsecondary institution and record the number of students who are enrolled in remediation courses.
  - Students will take an exit survey requesting notification of postsecondary institution of attendance upon high school graduation. Additionally, data will

be collected on college entrance exams to monitor performance. Information will also be gathered concerning employment status after high school graduation.

- OHS will develop an effective CTE data tracking system that will monitor the number of students awarded an industry certification in each pathway compared with the number enrolled in the course.
- In conjunction with the end of year VDOE completer survey, the Academy will implement a survey tracking protocol to follow students to their employment and record the number of students who are employed in high-wage, high-demand, high-skilled careers.

Highlights of the Program:

As a result of participating in the Governor's STEM Academy in the pathways of Engineering and Technology, Network Systems, and Facility and Mobile Equipment Maintenance, 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 postsecondary institutions, or specialized technical training schools;
- 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.

Attachment B

COMMONWEALTH of VIRGINIA

Peter Blake
Director

STATE COUNCIL OF HIGHER EDUCATION FOR VIRGINIA
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June 5, 2017

The Honorable Dietra Trent
Secretary of Education
Patrick Henry Building, 4th floor
1111 Broad Street
Richmond, VA 23219

Dear Secretary Trent,

In accordance with the Council's resolution of January 8, 2008, I am writing to convey SCHEV's approval of the proposal from Manassas City Public Schools to initiate a Governor's STEM Academy at Osbourn High School.

The proposal has been reviewed by SCHEV staff according to the criteria of:

- Career pathway requirements,
- Postsecondary and business partnership requirements,
- Academic quality requirements.

The proposed Governor's STEM Academy has been determined to satisfy each of the above criteria. Please be assured of the Council's ongoing interest in working with you and the State Board of Education to ensure that educational offerings at the Governor's STEM Academies are consistent with state guidelines. If Council can be of further assistance, please do not hesitate to contact us.

Sincerely,

Joseph G. DeFilippo, Ph.D.
Director of Academic Affairs & Planning

Cc: Dr. Steven R. Staples, Superintendent of Public Instruction, VDOE

Attachment C

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

Title of Proposal: **Manassas City Governor's STEM Academy**

Lead Entity for Proposal:

Date of Review: **June 8, 2017**

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).				N/A
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			

Criteria	Documentation			Comments
	Full	Partial	None	
Comments:				

III. Program Description

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

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

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

B. A statement of program objectives and performance measures to:

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

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

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

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

	Documentation			Comments
	Full	Partial	None	
	X			.
Comments:				

E. Program and course descriptions

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

Criteria	Documentation			Comments
	Full	Partial	None	
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	
Comments:				

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	X			

Criteria	Documentation			Comments
	Full	Partial	None	
innovative capacity of the region and/or the state.				
e. Additional career pathways may address one of the areas described above, or an area identified by the partnership as an area of interest, growth, or expansion for students in the service area of the Academy.	X			
Comments:				

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

	Documentation			Comments
	Full	Partial	None	
	X			
Comments:				

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

Criteria	Documentation			Comments
	Full	Partial	None	
a. Earn one or more industry certifications or state occupational licenses, and/or demonstrate competencies on an assessment instrument recognized by postsecondary institutions such as CLEP examinations, collaboratively designed or mutually approved end-of-course tests, college placement tests, or student portfolios reviewed by a team of college and high school faculty; **or**	X			

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

F. Length of program and daily schedule: Governor's 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	X			

Criteria	Documentation			Comments
	Full	Partial	None	
community, and partnership members; and				
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			p. 31
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:				

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

Proposal to Establish a Governor's STEM Academy

MANASSAS CITY PUBLIC SCHOOLS

Where Learning Powers the Future

July 6, 2017

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I. Overview

Osbourn High School (OHS) is located in historic Manassas, Virginia, and was established in 1977 as Manassas City Public Schools' (MCPS) only high school. OHS had a fall membership of 2,173 students in the 2015-2016 school year and is made up of a diverse student population consisting of 56 percent Hispanic, 22 percent White, 13 percent African-American and 5 percent Asian. Along with being culturally diverse, 44 percent of the students are classified as part of the "English Learning" population. OHS is fully accredited and is actively working to close the achievement gap and support second language learners so that all students graduate from high school on time and are college and career ready. Because of its size and location, MCPS has many advantages larger school divisions do not have that benefit students, such as multigenerational attachments to school and community which provide a strong alumni base of support.

OHS serves as a beacon to engage students, parents, businesses, and other community stakeholders and to enrich the lives of its children and citizens. The school's diversity is its strength and providing all students with opportunities to ensure college and career readiness is a commitment MCPS has made to its citizens. Community partners such as the Boys and Girls Club, Hispanic Business Council, Rotary Club, and Lions Club offer students and parents additional supports to enhance the educational process, in addition to after-school activities and parental engagement opportunities.

The 2015 graduating class of OHS had 419 graduates, according to the Virginia Department of Education's State Fiscal Stabilization Fund Indicator Report. This report collects data for the cohort of students entering school as ninth graders and graduating four years later. Of the 419 students, 217 enrolled in some postsecondary education program within 16 months of earning their high school diplomas. Only 60 students who are considered economically

disadvantaged and 35 students with a limited English proficiency were reported in this cohort. OHS is monitoring the progress of students who are economically disadvantaged or are second-language learners and is providing academic tutoring through Advancement Via Individual Determination (AVID), summer camps, and in connection with community partners.

According to the United States Department of Education's *Science, Technology, Engineering, and Math: Education for Global Leadership* webpage, "few American students pursue STEM fields and we have an inadequate pipeline of teachers skilled in those subjects" (www.ed.gov/stem). The Governor's STEM Academy at OHS (the Academy) will address this national need by aligning rigorous coursework with career pathways, along with providing students educational opportunities that include internships, college credit courses, job shadowing, and industry credentialing upon graduation. Additionally, the Academy will develop a broader faculty base with relevant industry training and expertise that is highly qualified according to Virginia Department of Education (VDOE) standards to teach in the Academy.

The Academy aligns the Career and Technical Education (CTE) program at OHS with rigorous math and science coursework and clearly defined pathways that prepare students for highly-skilled careers earning competitive wages. This adjustment in the structure of student plans of study provides a clear sequence of courses that ensures students have the appropriate credentials upon high school graduation and positions them for success in the workforce or college, whichever they decide.

II. Partnership Capacity

The Academy at OHS will complete the K-12 STEM plan approved by the MCPS School Board. The plan outlines the division's commitment to STEM education and establishes instructional practices that integrate STEM content with career opportunities. Such practices

include project-based learning, blended learning, and the use of technology to create a consistent curriculum ranging from elementary through high school, with program-specific adaptation at the high school level for work-based learning that is intentional and outcome-focused.

After numerous planning meetings and the Advisory Committee's input, the Planning Committee identified career pathways to provide local and regional businesses a workforce that is highly skilled. The Planning Committee (Appendix A) and the Advisory Committee (Appendix B) includes stakeholders in the following capacities: students, teachers, administrators, business partners, and community members. The Planning Committee met once a week to ensure completion of the Academy planning, and the Advisory Committee met once a month to review the Planning Committee's recommendations and to provide input, comments, and technical guidance.

MCPS is located in northern Virginia, which provides access to multiple industrial and higher education partners in the Manassas area. The largest employers in Manassas City currently include Micron Technology, Lockheed Martin, Digital Management Systems, the Federal Bureau of Investigation (FBI), and the U.S. Department of Defense (DOD). The northern Virginia region includes multiple healthcare facilities, a national airport system, a trans-Atlantic rail system, and multiple engineering firms, both public and private. Below are some of the partners of MCPS that actively support this proposal:

- Able Moving & Storage, Inc.
- Aurora Flight Sciences
- Aviation Institute of Maintenance
- George Mason University
- Infinite Printing
- Lockheed Martin
- Prince William County-Greater Manassas Chamber of Commerce
- Micron Technology, Inc.
- Miller Toyota
- Northern Virginia Checker Cab

- Northern Virginia Community College (NVCC)
- Project Mend-A-House
- T.A.C. Ceramic Tile Co.
- Twin Air LLC
- Impacto Youth
- Cowork LLC/DBA Centerfuse
- The Anderson Company, LLC
- Manassas Regional Airport

The signed partnership agreements (Appendix D) define the roles and responsibilities of MCPS and our partners, certifying their willingness and the capacity in which they can serve. For example, Lockheed Martin provides student internships, teacher field trips, and monetary contributions for scholarships and other needs to provide experiences that enhance student achievement.

MCPS is actively engaging new partners, in addition to those listed above, who are dedicated to STEM opportunities for students to create a highly skilled STEM workforce. These industry and higher education partners will provide continued guidance in a planning and advisory capacity. A Statement of Assurances (Appendix C) has been reviewed by the Planning Committee and has been presented to the superintendent of MCPS for approval.

Memorandum of Agreement

All members of the Academy Advisory Board have signed a memorandum of agreement (MOA) (Appendix D) outlining their responsibilities and stating willingness to be an active member of the combined Planning and Advisory Committee for the Academy. Additionally, a partnership agreement (Appendix D) was signed by partner organizations and the Academy in which both agree to work together to support students' pursuit of higher education and career opportunities in STEM-related fields.

III. Rationale

According to the U.S. Department of Commerce, "STEM workers drive our nation's innovation and competitiveness by generating new ideas, new companies, and new industries. However, U.S. businesses frequently voice concerns over the supply and availability of STEM workers" (U.S. Economics and Statistics Administration, 2011).

Virginia has identified key industries of the 21st century that include STEM-related fields such as Aerospace, Information Technology, and Automotive (Virginia Economic Development Partnership, 2016). Many businesses that are leaders in these industries are located in Manassas City. Additionally, Virginia ranks second in the nation for "knowledge jobs," which tend to require workers to have at least two years of college (State New Economy Index, 2014).

In the Washington, D.C. metro area, there are projected to be more than 700,000 jobs related to STEM, representing 27 percent of the regional job market. Nationally, there will be more than 9 million STEM jobs available by 2020 (U.S. Bureau of Labor Statistics, 2014; Metropolitan Policy Program, 2011). The Virginia Commission on Economic Information and Analytics indicates Prince William County, which includes Manassas City, projects a 15.09 percent increase in architecture and engineering occupations, 30.74 percent increase in computer and mathematical occupations, and an 11.18 percent increase in transportation and material moving occupations. With the projected increase in the number of skilled jobs in Virginia, the Academy will provide skilled employees to the local workforce which will support local and state economic development. Local industries have expressed a need to recruit local employees so that they do not have to relocate workers from outside the region.

Micron and similar companies in this area are struggling to find skilled employees.

> "We often hire people from outside the Northern Virginia area and many of them do not stay in this area for more than three years. Hiring and training individuals that eventually quit to return home creates a huge loss of revenue. We need to train STEM workers here so they will work here and stay here."
>
> *Zuzana Steen*
> *University and Academic Relations Manager, Micron Technologies Inc.*

Enhanced and Additional STEM and CTE Offerings

MCPS provides all students in grades kindergarten through eight with daily STEM instruction as outlined in the adopted K-12 STEM plan. Each year, MCPS sends 30 kindergarten to grade five teachers to the Children's Engineering Convention. These teachers bring their skills and innovation to the Children's Engineering Camp offered every summer to children in the first through fifth grade. Children learn engineering process skills they can apply during the academic school year. In grades five through eight, Project Lead the Way (PLTW) courses are incorporated into each grade-level curriculum. In elementary and middle school, all students participate in rigorous and engaging STEM curriculum. This gives students the critical thinking and problem-solving skills needed for rigorous courses when they enter the Academy.

The Planning and Advisory Committees have identified three pathways which will serve the needs of the local and regional workforce: Engineering and Technology, Network Systems, and Facility and Mobile Equipment Maintenance. Students trained and credentialed in these pathways can become employees who advance in the workplace or pursue postsecondary education. These pathways will begin with the PLTW Introduction to Engineering Design course.

Students in every pathway will complete CTE course sequences and earn industry credentials. This will ensure that all graduates of the Academy will receive the Board of Education's Career & Technical Education Seal. In addition, all students attending the Academy will be required to enroll and pass Algebra II. The Board of Education's Advanced Mathematics and Technology Seal may be awarded to students who earn either a Standard or Advanced Studies Diploma and satisfy all of the mathematics requirements for the Advanced Studies Diploma (four units of credit including Algebra II; two verified units of credit) with a "B" average or better; and either

- pass an examination in a career and technical education field that confers certification from a recognized industry, or trade or professional association;
- or, acquire a professional license in a career and technical education field from the Commonwealth of Virginia;
- or, pass an examination approved by the board that confers college-level credit in a technology or computer science area.

Students will incorporate advanced placement and dual enrollment courses into their plans of study. All students will have the opportunity to enroll in dual enrollment English and social studies coursework in the 11th and 12th grades. As a senior, a student has the opportunity to complete up to 18 dual enrollment credit hours in core area classes, and courses in Automotive and Networking Systems pathways are also offered for dual enrollment credit.

Through CTE sequence completion, in their chosen pathway, students will have the opportunity to earn industry certifications and credentials. In the Engineering and Technology Pathway, students will have the opportunity to earn engineering credentials through the Project Lead the Way program. In the Facility and Mobile Equipment Pathway, students will have the opportunity to earn Automotive Service Excellence (ASE) certifications in brakes, electronics,

and other automotive systems. In the Network Systems Pathway, students will have the opportunity to earn the A+ certification in computing and networking.

In preparation for active participation in the 21st century workforce, it is essential that high school graduates are given the opportunity to acquire the necessary skills and competencies to be competitive in the workplace and in higher education. To facilitate the transition to a more relevant institutional framework and instructional process, high school standards must be aligned with college and workplace expectations. The Academy focuses on the development of STEM and will prepare students to meet the growing demands of the workplace (U.S. Department of Education, 2011). Student use of a makerspace will enhance student academic achievement by allowing students to demonstrate their knowledge and understanding in an authentic and collaborative manner that supports the project-based learning provided in other content areas.

Underscoring a commitment to STEM, in 2016, MCPS offered a Cybersecurity Camp through a grant from the VDOE, serving 25 students in grades 10-12 at OHS. The three-week camp engaged participants in hands-on, project-driven activities and focused on exposing students to the field of cybersecurity. Summer internships which provide opportunities for students to acquire more skills are also offered. Recently, an OHS graduate spent eight weeks interning at Lockheed Martin in a paid internship position. Below is a narrative provided by the student who participated in this experience:

> "… I was exposed to a variety of programs and tasks and as a result, I have gained essential technical skills in numerous areas. From constructing a prototype to building hydrophones, I obtained experience that's unavailable in a typical classroom setting … Lockheed Martin has better prepared me for the next chapter of my life at George Washington University. I have a greater vision of my future and a broader skill set that will ultimately guide me to my

career. I believe that Lockheed Martin will allow me to reach my maximum potential."

Ariane Ramas
OHS Class of 2016

Fiscal Agent

MCPS will be the fiscal agent for the Academy. The division assures that operating funds, resources, and facilities will be available to support the program's initial needs, as well as projected needs, for the continued development of the Academy. Budget development for upcoming fiscal years will include program needs for the Academy.

IV. Program Description

Statement of Program Goals

To achieve the goals *Student Achievement, Learning Environment, and Program Effectiveness* of the Academy, students will complete a college and workplace readiness curriculum at the level specified for Commonwealth Scholars Course of Study, with the possibility of preapproved substitution of equivalent courses where there may be more relevant course selection for a particular career pathway. The Academy will provide students the opportunity to explore STEM careers and learn about academic prerequisites that lead to secondary and postsecondary degrees and credentials.

Statement of Program Objectives and Performance Measures

The following objectives have been established for the Academy to improve academic achievement, increase dual enrollment, prepare students for the workforce, decrease dropout rates, and increase the number of students attending postsecondary institutions:

- **Goal 1:** Student Achievement
    - **Objective 1:** The end-of-course Algebra I and Reading pass advanced rate will increase by 2 percent each year. The 2016 Spring Standards of Learning (SOL) pass advanced rate for Algebra 1 was 3 percent and Reading was 4 percent.
    - **Objective 2:** Teachers will create a more rigorous curriculum in reading and mathematics by participating in ongoing training in higher-order thinking strategies and questioning techniques through the Learning Focused Instructional Framework. OHS is increasing the level of rigor in all courses offered, including the alignment of all CTE course competencies.
    - **Objective 3:** Beginning in the 2017 school year, OHS will increase the number of students enrolled in dual enrollment courses by 2 percent each year. There are currently 545 students enrolled in dual enrollment courses.
    - **Objective 4:** Beginning in the 2017 school year, OHS will increase the graduation rate by .5 percent each year. In the 2015 school year, the on-time graduation rate was 86.1 percent.
    - **Objective 5:** Beginning in the 2017 school year, OHS we will decrease the dropout rate by 0.2 percent each year. In the 2015 school year, the dropout rate was 7.7 percent.
    - **Objective 6:** The CTE supervisor will monitor the credential and certification exams for the Academy's remediation plan. Dates for remediation have been established for each month from January through June 2018.

- **Objective 7:** The 2017-18 school year certification test data within the three Academy pathways will provide the baseline that will be assessed to determine the annual test score increase between 2 to 5 percent.

- **Goal 2:** Learning Environment
  - **Objective 1:** Based on students' plans of study, school counselors and teachers will collaborate regarding student progress to guide decisions in course scheduling.
  - **Objective 2:** OHS will provide all students in the Academy with work-based learning experience prior to high school graduation.
  - **Objective 3**: The CTE Department will include internships, job shadowing, and enrichment programs in the summer that will expose students to local businesses and experiential learning.
  - **Objective 4:** Teachers and school counselors will monitor progress of struggling students and student school engagement through the school division learning management system.
  - **Objective 5:** Teachers and school counselors will provide academic interventions and further community support to work with students and families to ensure on-time high school graduation. All students have access to the following interventions: AVID Tutors, Saturday Learning Seminar, Response to Intervention, and Eagle Block (a 45-minute block in each student's daily schedule where they have access to remediation for any course).
  - **Objective 6:** All students will meet with their Professional School Counselor two times per year to discuss personal goal setting, academic planning, and career planning.

- **Objective 7:** Counselors will meet with all seniors during the first month of the academic school year to assess on time graduation achievement and postsecondary opportunities/plans.

- **Goal 3:** Program Effectiveness
  - **Objective 1:** OHS will increase the number of students enrolling in higher education by 2 percent a year. According to the Federal Graduation Indicator (FGI), 52 percent of OHS graduates in the 2015 cohort enrolled in higher education within 16 months of earning their diploma.
  - **Objective 2:** Teachers and school counselors will work with AVID teachers and tutors to provide students with requisite knowledge and understanding of enrollment in postsecondary institutions and requirements for admission.
  - **Objective 3:** In conjunction with the end of year VDOE completer survey, the Academy will create an online survey to use as the protocol to follow students to their postsecondary institution and record the number of students who are enrolled in remediation courses.
  - **Objective 4:** Students will take an exit survey requesting notification of employment status and/or postsecondary institution of attendance upon high school graduation. Additionally, data will be collected on college entrance exams to monitor performance.
  - **Objective 5:** OHS will develop an effective CTE data tracking system that will monitor the number of students awarded an industry certification in each pathway compared with the number enrolled in the course.
  - **Objective 6:** In conjunction with the end-of-year VDOE completer survey, the Academy will implement a survey tracking protocol to follow students to their

employment and record the number of students who are employed in high-wage, high-demand, high-skilled careers.

Brief Description of the Program

The Academy will have the capacity to serve approximately 140 students. The Academy will consist of three pathways, which have been identified in the Advisory and Planning Committee meetings that represent the needs of the local, regional, and state workforce. All career pathways will provide opportunities for hands-on and project-based learning. Project-based activities will be integrated into real-world experiences such as job shadowing and internships. This will create a career-focused program that allows local business sites and workplaces to serve as adjunct campuses. The Academy will be physically located at OHS, though some dual enrollment courses may be held at the local community college, NVCC. Currently, there are classes offered at OHS for dual enrollment credit.

As part of the MCPS K-12 STEM Plan, students develop career studies in elementary school that reflect their personal interests and inherent academic strengths. Using Naviance, MCPS students create personalized career plans of study (Appendix E) which allow students to focus on academic pursuits that translate to career pathways. Counselors continually communicate with students, parents, and teachers to collaborate on academic progress toward students' articulated career goals. Students are engaged in rigorous curriculum that accesses higher-order thinking throughout elementary and middle school. This helps build skills and allows students to participate in age-appropriate work that incorporates engineering design, strategic planning, and organization.

In addition, elementary and middle school students are enrolled in courses that build necessary mathematics and reading skills for future pathways. As a result, rising ninth graders

are prepared for the mathematical reasoning and technical literacies that are embedded within all pathways of the Academy. Students work with counselors and program advisors to develop sequential schedules that are aligned with their career goals after high school.

Evidence of Governor's Exemplary Standards Award Program for CTE

The Academy will promote high academic standards, is committed to promoting business and community partnerships, and will apply for the Governor's Exemplary Standards Award at the conclusion of the first year of implementation. Positive outcomes will be shared with other programs working toward a similar designation.

Career Pathways

The Academy proposes three career clusters with a sequenced pathway for each:

- Science, Technology, Engineering, and Mathematics (STEM) with the pathway of Engineering and Technology
- Information Technology with the pathway of Network Systems
- Transportation, Distribution & Logistics with the pathway of Facility and Mobile Equipment Maintenance

Pathway Descriptions

Students attending the Academy will take part in a nontraditional high school program that includes standard and advanced courses in English, mathematics, history and social science, science, physical education, and world languages, where they can earn college credit prior to graduation. In addition, students attending the Academy will take the STEM-related courses for the pathways described below and on the following pages. Students will have opportunities to take dual enrollment courses for college credit in their particular STEM field of study through NVCC, as well as earn licensure and/or credentials as part of preparatory workplace readiness. Many graduating seniors will also be able to earn industry certifications and pass required industry assessments. By their senior year of high school, students will have the opportunity to

specialize and participate in job-shadowing, workplace co-ops, or internships with local business partners. These workplace programs will provide students with unique perspectives for college interests while earning valuable workplace experience.

Engineering and Technology Pathway

First-year students at the Academy will enroll in Introduction to Engineering Design (8439), the first PLTW foundation course. In this STEM course, students will apply engineering design processes learned in elementary and middle school. Students will use 3D computer modeling software to navigate and master the engineering design process to solve design problems for which they ultimately develop, analyze, and create product models. The students then complete Principles of Engineering (PLTW) (8441) where they will dig deeper into the engineering design schema and can apply their problem-solving, planning, and research skills. After completion of both foundation courses, students will enroll in PLTW Digital Electronics (8440). With the use of computer simulations, students will work with circuits and devices. The final course in the sequence is Engineering Design and Development (8443) in which students engage in a problem-based learning opportunity participating in internships, job shadowing, and the development of a portfolio that contains evidence of their work. The following courses provide a more detailed description of the pathway.

Introduction to Engineering Design (PLTW) (8439): In this course, students use 3D design software to help them create solutions and solve problems. Students learn how to document their work and communicate with peers and members of the professional community. The major focus is to expose students to the design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation.

Principles of Engineering (PLTW) (8441): This survey course exposes students to some of the major concepts encountered in a postsecondary course. Students have an opportunity to investigate engineering and high-tech careers and to develop skills and understanding of course concepts. Students employ engineering and scientific concepts in the solution of engineering design problems. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges. Students also learn how to document their work and communicate their solutions with peers and members of the professional community.

Digital Electronics (PLTW) (8440): This course is designed to follow the Principles of Engineering and Introduction to Engineering Design courses as part of the engineering program. Students will employ the use of computer simulations to discover the rationale of electronics as they create, test, and construct circuits and devices. They will apply control system programming and explore sequential logic and digital circuitry principles; topics in computer circuitry are also addressed.

Engineering Design and Development (PLTW) (8443): This capstone course is the final course in the sequence in which students synthesize knowledge, skills, and abilities through an authentic engineering experience. Guided by community mentors through internships, teams of students work together to research, design, and construct solutions to engineering problems. Students will develop and formally present an independent-study project and a team-oriented project that are critiqued by an evaluation committee.

Upon completion of the pathway, participants may qualify to take several industry certification exams:

- College and Work Readiness Assessment (CWRA+)
- Pre-Engineering/Engineering and Technology Assessment

- Project Lead the Way End-of-Course Tests
- Workplace Readiness Skills (WRS) for the Commonwealth Assessment
- CAD Assessment

Engineering and Technology

Classes and Suggested Sequences

(Students must be enrolled in the Academy)

Grade	Course Title	Course Code
9	Introduction to Engineering Design (PLTW)	8439
10	Principles of Engineering	8441
11	Digital Electronics (PLTW)	8440
12	Engineering Design and Development (PLTW)	8443

The following courses support the above Engineering and Technology courses:

Course Title	Course Code
Technology of Robotic Design	8421
Aerospace Engineering (PLTW)	8428

College credit opportunities:

Course Title	Course Code
AP Calculus AB	3177 (00)
AP Calculus BC	3177 (01)
Dual Enrollment English 12	1600/1601

Network Systems Pathway

Students will begin their course of study with the PLTW course Introduction to Engineering Design (8439). In their sophomore year, students will enroll in Computer Systems Technology I (8622). The introductory courses develop students' understanding of the essential skills and competencies expected of IT professionals including fundamentals, network systems, computer maintenance/upgrading/troubleshooting, computer applications, programming, security, webpage design, and interactive media. Students will have the opportunity to take these courses for dual enrollment credit through NVCC. Students will also evaluate the impact of IT on careers and society (VDOE, 2015). The following courses provide a more detailed description of the pathway.

The Academy will offer courses to facilitate student progress in the Network Systems Pathway through enhancements and collaboration with Virginia STAR and NOVA. We are in the process of developing additional relationships with local and regional businesses which will further support the Network Systems Pathway.

Introduction to Engineering Design (PLTW) (8439): In this course, students use 3D design software to help them create solutions to problems. Students learn how to document their work and communicate solutions with peers and members of the professional community. The major focus is to expose students to the design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation.

Computer Systems Technology I (8622): In this course, students gain practical experience in assembling a computer system, installing an operating system, troubleshooting computers and peripherals, and using system tools and diagnostic software. They develop skills in computer networking and resource sharing. In addition, students explore the relationships between internal and external computer components.

Computer Systems Technology II (8623): This advanced course provides students with training in procedures for optimizing and troubleshooting concepts for computer systems and subsystems. Students explore wireless technologies (e.g., Bluetooth, Wi-Fi) and create and configure a network. Emphasis is placed on security, technical proficiency, skill-building, and workplace readiness. The course prepares students for postsecondary education and training as well as for a successful career in information technology.

Computer Network Software Operations (6650): This course is designed to teach aspects of computer support and network administration. Students are exposed to networking concepts and taught to include usage and components, create peer-to-peer network systems, and

build client server networks. Also included in the instructional process are installation of operating systems (OS), creating and managing accounts, uploading of software, and creating and managing security plans. Eleventh-grade students enroll in the Computer Network Software Operations (6650) course to learn about the many aspects of computer support and network administration. Students begin learning the daily activities of the career, including the installation and configuration of network cards, management of operating systems and software, and supervision of accounts. This course may also include software-based network operating systems such as Windows or Linux (VDOE, 2015).

Computer Network Software Operations, Advanced (6651): This advanced-level course follows course 6650 and is the capstone course for this pathway. Instruction will continue to address network administration and the management and support of the network users and systems. Topics include the computer professional's responsibilities, training for users, evaluation of new technology, development of system policies, workstation troubleshooting, management of network services and protocols, website management, and other network topics. Additionally, students will learn how to install OS, create and manage accounts, upload software, and develop and manage security plans. This course will prepare students for industry certification, includes a concurrent internship, and covers advanced aspects of network administration. Topics include investigation of responsibilities of computer professionals, evaluation of software, creation of training materials, management of network services, and communications. Students will also learn techniques for managing operating systems, managing and setting up accounts, and creating and implementing security plans (VDOE, 2015).

Upon completion of the pathway, participants may qualify to sit for the following industry certification exams:

- A+ Certification (2006 Objectives)

- Brainbench Network Administration Certifications
- Brainbench Systems Administration Certifications
- Brainbench Technical Support Certifications
- Business Information Processing Assessment
- Certified Novell Administrator (CNA)
- Cisco Certified Entry Networking Technician (CCENT)
- College and Work Readiness Assessment (CWRA+)
- CompTIA IT Fundamentals Certification
- Computer Maintenance Technology Exam
- Computer Networking Fundamentals Assessment
- Computer Repair Technology Assessment
- Computer Technology Assessment
- Global Standard (GS4) Certification Exam
- Internetworking Examination
- Microsoft Certified Professionals (any Microsoft Professional Certification exam)
- Microsoft Office Specialist (MOS)
- Microsoft Technology Associate (MTA)
- National Career Readiness Assessment
- Network Administration Certification Tests
- Network Pro Certification Tests
- Network + Certification Examinations
- Oracle Certification Examinations
- Oracle Certified Junior Associate Examinations
- PC Pro Certification Assessment
- Security Pro Certification Assessment
- Security + Certification Examination
- Systems Administration Certification Tests
- Technical Support Certification Test
- Workplace Readiness Skills for the Commonwealth Assessment (WRS) (CTECS)

Network Systems

Classes and Suggested Sequences

(Students must be enrolled in the Academy)

Grade	Course Title	Course Code
9	Introduction to Engineering Design (PLTW)	8439
10	Computer Systems Technology I	8622
11	Computer Systems Technology II	8623
11	Computer Network Software Operations	6650
12	Computer Network Software Operations, Advanced	6651

The following courses support the above Network Systems courses:

Course Title	Course Code
Computer Information Systems	6612/6614
Introduction to Computer Applications and Concepts	ITN 154
Wireless Network Administration	ITN 260
Computer Information Systems, Advanced	6613/6615
Database Design and Management (Oracle), Advanced	6661
Database Design and Management with PL/SQL	6662
Geospatial Technology I	8423

College credit opportunities:

Course Title	Course Code
Computer Systems Technology I	8622
Computer Systems Technology II	8623
Computer Network Software Operations	6650
Computer Network Software Operations, Advanced	6651
Advanced Placement Statistics	3192
Advanced Placement Calculus AB	3177

Facility and Mobile Equipment Maintenance Pathway

First-year students of the Academy will enroll in Introduction to Engineering Design (8439), the first PLTW foundation course. In this STEM course, students will apply engineering design processes learned in elementary and middle school. Students will use 3D computer modeling software to navigate and master the engineering design process to solve design problems for which they ultimately develop, analyze, and create product models. The second course is Automotive Technology I (8506), which is offered as a dual enrollment course, and is where students will work with a variety of tools and materials as they learn theory and operation

of automotive engines, brakes, electrical, electronic, suspension, and steering systems. Next, Automotive Technology II (8507), also offered as a dual enrollment course, addresses advanced competencies and leads to certification. Finally, Automotive Technology III (8508) is the pathway's capstone course. This course represents middle-tier standards of the National Automotive Technicians' Education Foundation's (NATEF's) Automobile Service Technology accredited program and affords students additional preparation for certification exams. The following courses provide a more detailed description of the pathway:

Automotive Technology I (**dual enrollment)** (8506): This area of transportation has been affected by the advances in technology. This course helps prepare students with state-of the-art technology and training. NATEF's Maintenance and Light Repair accredited program competencies are integrated into instruction. Students are exposed to instruction in all areas as they prepare for the Automotive Service Excellence (ASE) Student Certification. Students enter tenth grade with Automotive Technology I as a dual enrollment course. Students will learn to inspect, diagnose, and repair automotive vehicles through practical lab work; use critical thinking skills to troubleshoot and solve automotive problems; and learn the basic skills of this career and best practices for lab safety.

Automotive Technology II (dual enrollment) (8507): This advanced-level course follows course 8506, with new instruction regarding the operation of automotive engines, brakes, electrical, electronic, suspension, and steering systems. Successful completion of this course will result in program completion and help to prepare students for the ASE student certification exam. In the 11th grade, students will enroll in the dual enrollment course Automotive Technology II. The completion of Automotive Technology I and Automotive Technology II prepares students for the ASE Student Certification.

Automotive Technology III (8508): This is the last in the course sequence for Automotive Technology. Students must be program completers (pass courses 8506 and 8507) to be enrolled in this capstone course that represents the middle-tier standards of the NATEF's accredited program. Students are provided instruction in all systems in an authentic setting and are prepared for the ASE examination.

Upon completion of the pathway, participants may qualify to sit for several industry certification exams:

- ASE Student Certification
- ASE Teacher certification Examination
- Automotive Technician Advanced Assessment
- Automotive Technician Core Assessment
- College and Work Readiness Assessment (CWRA+)
- Customer Service Specialist (CSS) Examination
- Mobile Communications and Electronics Installer (MCEI) Examination
- National Career Readiness Assessment
- Professional Communication Certification Examination
- Workplace Readiness Skills for the Commonwealth Assessment

Facility and Mobile Equipment Maintenance

Classes and Suggested Sequences

(Students must be enrolled in the Academy)

Grade	Course Title	Course Code
9	Introduction to Engineering Design (PLTW)	8439
10	Automotive Technology I	8506
11	Automotive Technology II	8507
12	Automotive Technology III	8508

The following courses support the above Facility and Mobile Equipment Maintenance courses:

Course Title	Course Code
Aerospace Engineering (PLTW)	8428
Diesel Equipment Technology I	8613
Diesel Equipment Technology II	8614
Diesel Equipment Technology III	8615

College credit opportunities:

Course Title	Course Code
Automotive Technology I (dual enrollment)	8506
Automotive Technology II (dual enrollment)	8507
Automotive Technology III (work-based learning)	8508
Advanced Placement Statistics	3192
Advanced Placement Calculus AB	3177
Advanced Placement Calculus BC	No Va. code
Advanced Placement Physics 1	4573
Advanced Placement Physics 2	4574
Dual Enrollment English 12	1160

Osbourn High School's Automotive Technology program is currently NATEF accredited through November 2019. The Diesel Technology program will begin the accreditation process during the 2017-2018 school year based upon the legislation enacted by the Virginia General Assembly as referenced below:

> *Legislation enacted in the 2011 Virginia General Assembly (HB 1493) and amended in 2012 (HB 1108) requires where there is a national industry certification for career and technical education instructional personnel or programs for automotive technology, the Board of Education must make such certification mandatory. The provisions of this act shall become effective July 1, 2013. To comply with the requirements, all Career and Technical Education (CTE) automotive, auto body, and diesel technology programs must be NATEF accredited and the instructors must be certified by the National Institute for Automotive Service Excellence (ASE).*

Requirements for Successful Program Completion

Students enrolled in the Academy must be in good standing, academically and behaviorally. Students must also earn at least nine transferrable college credits through dual enrollment and/or Advanced Placement options, as defined in the Early College Scholars program. Students must maintain an overall 3.0 grade-point average and earn a minimum of a final 2.5 grade-point average in their program coursework. All students attending the Academy must participate in at least one work-based learning experience, such as career shadowing, a mentorship, or an internship. All students must be involved in at least one project-based learning activity, the results of which will be displayed as part of a student showcase or capstone night.

Graduates' Achievement of Benchmarks

Students must pass all end-of-course SOLs and the Workplace Readiness Skills (WRS) Assessment. Students attending the Academy must earn one or more Board of Education-approved industry certifications or state occupational licenses, or demonstrate competency through an assessment that has been accepted as an appropriate end-of-course exam or college placement test. Students will be expected to be involved in at least one local, state, or national career and technical education student organization designed to encourage and support interest in their career pathway.

Work-Based Experience

Through middle and high school, students will participate in classes that are focused on project-based learning. In addition, students will have the opportunity to participate in STEM co/extra-curricular activities and competitions including the following:

- Career and technical student organizations
- FIRST Robotics Team: Students build robots that complete tasks in a competition setting

- FIRST Robotics Mentor Program: high school student's mentor and coach students on FIRST Robotics Teams in the middle and elementary after-school program
- SeaPerch: Students build underwater remotely operated vehicles (ROVs) that complete tasks in a competition setting
- SkillsUSA
- Technology Student Association (TSA)
- Future Business Leaders of America (FBLA)
- Cybersecurity Camp
- Jet Camp: Spring Break and Summer program where students participate in activities at a local aviation school, Aviation Institute of Maintenance, Manassas, VA.

The Academy will also provide students with opportunities for internships, job shadowing, workshops, field trips/tours, and classroom speakers (both virtual and on-site). These relationships are further defined in the memorandum of agreement (MOA) documents (Appendix D). Junior and senior year students will build an online portfolio of their work-based experiences which will be part of an online community of STEM Academy students and teachers. Students will also be required to create and update a blog that includes reflections on work experiences and check sheets on tasks/competencies completed.

Instructional Schedule

The Academy is a part-day program which is embedded within a full-day instructional program (Appendix F). It maximizes instructional time within a traditional high school schedule which operates on a block schedule. Students will attend four classes each day (a total of eight classes). In addition, there is a static block (also known as the Eagle Block) which is a daily enrichment/advisory period that provides students opportunities to participate in remediation or tutoring. This helps to provide the students with time to make up missing assignments, quizzes, or tests if they are unable to stay after school. Summer enrichment opportunities will also be offered independently and on a volunteer basis.

Assurance from the Fiscal Agent

MCPS will be the fiscal agent for the Academy. The division assures that operating funds, resources, and facilities will be available to support the program's initial needs, as well as projected needs, for the continued development of the Academy. Budget development for upcoming fiscal years will include program needs for the Academy. Refer to the Statement of Assurances (Appendix C) and the budget table found in Appendix H.

Allocated Materials and Equipment

Equipment, resources, and supplies will be provided by MCPS in coordination with community business benefactors as well as through funds provided by the Carl D. Perkins Career and Technical Education Act and fiscal year budgets.

Internal Program Evaluation

MCPS conducts an annual review of its programs. It is developing a protocol for the Academy to ensure achievement of goals and correlation to student achievement in content areas and other indicators. The CTE administrator will create a survey to receive feedback from students, staff, parents, community, and partners as part of the comprehensive review to ensure desired outcomes and inform continuous improvement.

The Academy policies and procedures have already been determined by the MCPS School Board and will be subject to an ongoing review process conducted by the Planning and Advisory Committees to include satisfaction surveys and self-assessments. Input will be received from all stakeholders: students, parents, staff, and community members.

The pathways offered by the Academy will be monitored for student performance in core academic classes as indicated on the SOL exams administered annually, the number of students passing CTE industry certifications, and the number of completers in each of the Academy's three pathways. In addition, graduates will be surveyed on the efficacy of the program. The CTE

Administrator, Planning Committee, and Advisory Committee will review and recommend actions for continuous improvement of the program in August, before the start of school. The CTE Administrator and the Advisory Committee will review the satisfaction surveys, appropriate SOL data, Scholastic Aptitude Test (SAT) scores, and any other college preparation data.

V. Administrative Procedures

Partnerships

MCPS has developed meaningful relationships with members of private businesses and industry, education levels K-16, and community and government agencies to advance areas of CTE. Partnerships with the Academy have been cited in the Rationale and Memorandum of Agreement sections of this proposal, found on pages four and five.

Student Selection Process

Students will begin exploring the opportunity to participate in the Academy in middle school through an outreach effort initiated by the Academy faculty and students. Presentations in class, curriculum/career fairs, extracurricular clubs, and meetings with school counselors will help students learn about and explore opportunities at the Academy. Students may then apply for admission to the Academy during their eighth-grade year. General expectations for successful student admission include a minimum 2.5 grade-point average, a demonstration of interest in STEM courses and/or STEM careers, and demonstrated achievement in a rigorous math and/or science course at the middle school level, including Algebra I. Once the student has entered ninth grade, a career cluster will be declared and the student will work with school counselors to map out a pathway that best addresses the student's interests.

Admission to the Academy as a rising freshman, though scripted, is not exclusionary. Students not meeting recommended criteria may be considered for admission with

recommendations from a minimum of three teachers, including at least one math teacher. Disclaimers will be signed by the student, parent, and counselor acknowledging the student will likely need to obtain additional support to be successful in the rigorous freshman curriculum in the Academy. The intent is to establish criteria for progression through additional levels in the Academy and to acknowledge inherent challenges for students.

In summary, the selection criteria are as follows:

(1) Student interest

(2) Parent approval

(3) Pass *all* mathematics and science SOL exams in eighth grade

(4) Successful completion of Algebra I SOL exam, if applicable

(5) Cumulative 2.5 grade-point average or better upon the completion of eighth grade

Students seeking admission to the Academy in tenth grade must meet the following criteria:

(1) Student interest

(2) Parent approval

(3) Pass Algebra I and either Earth Science or Biology SOL exams

(4) Cumulative 2.5 grade-point average or better upon the completion of ninth grade

(5) Teacher recommendation and school counselor approval

Code of Conduct, Attendance, and Transportation

The Academy will use the MCPS Code of Conduct to ensure a safe and engaging environment for students and teachers. Students are expected to be in school every day, on time, and prepared to learn. Exceptions are made for illnesses and emergencies as per MCPS attendance regulations.

A shuttle bus will take students to NVCC for dual enrollment classes and bring them back to OHS. Students who can drive will obtain a parking pass from NVCC or their internship site, if applicable, and must have a consent form signed by the parent, student, and administrator.

Faculty Recruitment

The Academy will hire staff members who meet the Virginia teacher licensure requirements or postsecondary faculty requirements for all classroom instruction. These candidates will also be screened according to the policies and procedures set by the MCPS School Board. Recruitment of highly-qualified teachers with expertise in the content area and who possess industry certifications will ensure fidelity to the program. Preference will be given to those who have prior STEM instructional experience.

Staff Development and Evaluation

MCPS employs the Teacher Performance Evaluation System (TPES) using the Goals and Roles Performance Evaluation Model for collecting and presenting data to document performance based on well-defined job expectations. The TPES provides a balance between structure and flexibility. It is prescriptive in that it defines common purposes and expectations, thereby guiding effective instructional practice. At the same time, it provides flexibility, allowing for creativity and individual teacher initiative. The goal is to support the continuous growth and development of each teacher by monitoring, analyzing, and applying pertinent data compiled within a system of meaningful feedback.

MCPS uses a proficiency-based and competency-based model for classroom practices, combined with exemplary professional development from Learning Focused Schools (LFS). This instructional framework ensures that teachers provide outstanding instruction and constructive formative assessments for optimal student learning. All core content and CTE courses will use

this framework to provide instruction at rigorous levels and to assist students' transition from one grade level to the next.

Teachers will be trained in project-based learning by the Buck Institute, which provides the gold standard in project-based learning for grades K-12 focusing on engaging and motivating students. Enhancements to professional development will support blended learning and CTE to ensure they are able to create and teach rigorous curriculum that ultimately leads to student credentials and college credits upon high school graduation. Teachers will be given opportunities to write curriculum over the summer and will be provided with professional development credit and reimbursement for their effort. They will also be provided opportunities to tour our partners' facilities to enhance the scope of their instruction and to learn more about the needs and skills the employers seek in the workforce.

During the summer of 2016, MCPS held a teacher institute in conjunction with George Mason University to assist in the integration of mathematics into STEM courses.

Parent, Student, and Community Involvement

OHS is the only high school in Manassas City and consequently enjoys a high degree of support from the community for all student programs and activities. The Academy will become a focal point through involvement in school and community activities. Business partners and community stakeholders will support the Academy by working with developmental programs at the elementary and middle school levels, in addition to providing the support outlined in the partnership agreements.

Students, parents, and teachers will work collaboratively on co-curricular and extracurricular activities, student programs, and community events. This will demonstrate how the Academy is part of the community and exists to serve the needs of Manassas City and

northern Virginia. Example activities include: FIRST Robotics clubs at the elementary, middle and high school levels; service learning; and participation in community STEM nights.

Counselors and program advisers will assist students in reviewing multiple postsecondary pathways, as well as the preliminary steps needed at the high school level. The Career Interest Inventory by Naviance is currently used by students in the eighth grade to create a personalized plan of study and discover career options. These data are used to develop the career plans of studies in collaboration with parents and school counselors to select course sequences that lead to credentials and workplace readiness as described in the pathways. Examples of Plans of Study are shown in Appendix E. Students will be encouraged and supported to meet specific requirements for graduation in order to receive various diploma seals upon graduation; such as the Governor's Seal, the Board of Education Seal, the Board of Education's Career & Technical Education Seal, and the Board of Education's Advanced Mathematics & Technology Seal.

VI. Documentation of Insurance, Budget, and Other Fiscal Information

MCPS is insured by Risk Management Programs, Inc. MCPS does not provide individual health insurance to students; however, there is a voluntary student accident insurance program available for purchase from an outside vendor, Markel. A copy of the MCPS Certificate of Insurance may be found in Appendix G.

The Academy will build on the current programs within CTE. The following are identifiable expenses the Academy expects to incur, identified as the Start-Up Budget (Appendix H): Personnel and Employee Benefits in the amounts of $168,000 and $42,000, respectively, were based on the need to hire three new teachers for the Academy. This ensures a new teacher will be assigned to each of the designated pathways identified earlier in this proposal. The benefits line item would provide for FICA and Social Security taxes, life insurance, Medicare,

and health benefits. The budgeted amount of $2,000 for purchased services includes the costs for contracting speakers, consultants, and advisers. Any costs associated with student field experiences will be charged to this category. The budgeted expense in the category of internal services for $2,000 will include the costs for community communication, development of brands, costs associated for hospitality events, and expenses for awards and recognition items. The staff development budgeted expense of $5,000 will provide for teacher resource materials and expenses related to online training. Seven-thousand five-hundred dollars has been allocated to the Summer Component line item for facilitation of summer readiness camps, SOL boot camps for instructional remediation, and summer field trips. Budgeted expenses for travel, $1,500, will be allocated for costs associated with staff attendance at statewide STEM events, as well as travel costs associated with local, regional, and state competitions. Contractual services in the amount of $14,000 will pay for teachers to write curriculum over the summer and pay for any expenses related to providing a Saturday Support Program. Additional expenses include the annual participation fee for PLTW of $3,000. Materials and supplies which include consumable materials needed for projects in all three pathways, as well as prep materials for certification tests, is budgeted to be $5,500. The equipment line-item expenses of $25,000 include the purchase of a new automotive lift for the automotive shop, upgrade of computers and computer software, and purchase of a 3D printer. Last, $5,000 has been budgeted for the addition of new computer drops and the upgrade of a router.

VII. Summary

The Academy and its many stakeholders, including the Superintendent of MCPS, the administration, faculty, staff, members of the Planning and Advisory Committees, and partners in the business community, share a vision and commitment to providing a world-class learning

environment for our students. Additionally, all share the desire to prepare students for the workforce with the knowledge and skills needed to make them competitive and workplace ready for gainful employment in career pathways identified as critical areas for growth and development.

The input and collaboration from the stakeholders with curriculum development, revisions, and enhancements will assist with keeping instruction for students and professional development for teachers timely and relevant for the career pathways of Engineering and Technology, Network Systems, and Facility and Mobile Equipment Maintenance. These stakeholders are at the forefront of changing needs and technological advancements in the work environment. The Academy's responses to keeping current with instruction will be paramount in ensuring students are prepared for the demands of the changing workplace environment.

The Academy will continue to build on and maximize the role of CTE instructional programs and how they assist in student retention, on-time graduation rates, and enrollment in postsecondary education with NVCC, George Mason University, and other institutions of higher learning.

VIII. APPENDICES

Appendix A

Planning Committee Members

Eugene Brown
Northern Virginia Checker Cab
docbrownrs@msn.com

John Cornicelli
Department of Homeland Security
john.cornicelli@gmail.com

Angie Hall
Able Moving and Storage
ahall@ablemoving.com

Pedro Hernandez
Manassas City Public Schools
phernandez@mcpsva.org

Steve Kuhn
Able Moving and Storage
SKuhn@ablemoving.com

Susan McNamara
Manassas City Public Schools
smcnamara@mcpsva.org

Diane Mucci
Northern Virginia Community College
dmucci@nvcc.edu

Carol Murphy
Manassas City Public Schools
carolmurphy@mcpsva.org

Terita Norton
The Aerospace Corporation
Terita.R.Norton@aero.org

Zuzana Steen
Micron Technologies, Inc.
zsteen@micron.com

Paul Steiner
Manassas City Public Schools
psteiner@mcpsva.org

Aaron Tolson
Twin Air LLC
aaron@twinairllc.com

Andre Williams
Lockheed Martin
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Noel Wolber
Infinite Printing
noel@infinite-print.com

Patricia Woodside
Aurora Flight Sciences
pwoodside@aurora.aero

PLANNING COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

Planning Committee Member Agreement:

The Governor's STEM Academy at Osbourn High School (The Academy) depends on the Planning Committee, made up of industry, business, higher education and government for guidance and support to ensure success.

As a member of the Planning Committee, I will effectively:

1. Assist in the development of The Academy goals and objectives
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4. Provide oversight and support of programs and course objectives to ensure alignment to postsecondary and workforce needs
5. Provide on-going monitoring of programs, courses, and co-curricular initiatives to assure achievement of The Academy's goals and objectives
6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Eugene Brown
(print)

Title: Community outreach director

School/Institution/Organization: Northern Virginia Checker Cab

Email: docbrownvsa@msn.com

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

C Brown
(Signature)

8/29/16
(Date)

PLANNING COMMITTEE CERTIFICATION

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Name: JOHN. CORNICELLI
(print)

Title: Dept. of Homeland Security

School/Institution/Organization: NVCC

Email: JOHN.CORNICELLI@GMAIL.COM

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

26 AUG '16
(Date)

PLANNING COMMITTEE CERTIFICATION

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Angie Hall (print)

Title: Payroll, HR + Employee Ben. Manager

School/Institution/Organization: Able Moving + Storage

Email: ahall@ablemoving.com

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Angie Hall
Signature

8/30/16
Date

STEM.Planning 8-26-16

PLANNING COMMITTEE CERTIFICATION

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Name: Pedro Hernandez
(print)

Title: Supervisor of Digital Learning and Innovation

School/Institution/Organization: Manassas City Public Schools

Email: phernandez@mcpsva.org

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

9/2/16
Date

STEM.Planning 8-26-16

PLANNING COMMITTEE CERTIFICATION

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Name: STEVE KUHN
(print)

Title: COO

School/Institution/Organization: ABLE MOVING & STORAGE

Email: SKUHN@ABLEMOVING.COM

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

8.31.16
Date

STEM.Planning 8-26-16

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Name: Susan Ann McNamara
(print)

Title: Supervisor K-12 Career & Technical Education

School/Institution/Organization: MCPS

Email: smcnamara@mcpsva.org

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Susan McNamara
Signature

8/30/16
Date

STEM.Planning 8-26-16

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Name: Diane Mucci
(print)

Title: Dean Science and Applied Technologies

School/Institution/Organization: Northern Virginia Community College

Email: dmucci@nvcc.edu

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Diane Mucci
Signature

08/30/16
Date

STEM.Planning 8-26-16

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Carol Murphy
(print)

Title: K12 Science Content Specialist

School/Institution/Organization: Manassas City Public Schools

Email: carolmurphy@mcpsva.org

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

8/31/16
Date

STEM.Planning 8-26-16

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Terita Norton
(print)

Title: Senior Project Leader

School/Institution/Organization: The Aerospace Corporation

Email: Terita.R.Norton@aero.org

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

09/01/2016
Date

STEM.Planning 8-26-16

Planning Committee Certification

The Governor's STEM Academy at Osbourn High School

Planning Committee Member Agreement:

The Governor's STEM Academy at Osbourn High School (Manassas City Public Schools) depends on the Planning Committee, made up of industry, business, higher education, and government for guidance and support to ensure success.

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5. Provide ongoing monitoring of programs, courses, and co-curricular initiatives to assure achievement of the Academy's goals and objectives.
6. Serve as Ambassador of The Governor's STEM Academy at Osbourn High School to the community, businesses, industry, and government.

Name: Zuzana Steen
(print)

Title: University & Academic Relations Manager

School/Institution/Organization: Micron Technology, Inc.

Email: zsteen@micron.com

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

8/24/16
(Date)

PLANNING COMMITTEE CERTIFICATION

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Paul Steiner
(print)

Title: CTE Administrator Osbourn High School

School/Institution/Organization: Osbourn High School (MCPS)

Email: Psteiner@MCPSVA.org

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

8/26/16
(Date)

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: AARON TOLSON
(print)

Title: OPERATIONS MANAGER

School/Institution/Organization: TWIN AIR LLC

Email: AARON@TWINAIRLLC.com

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

Date 8/31/16

STEM.Planning 8-26-16

PLANNING COMMITTEE CERTIFICATION

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Andre Williams
(print)

Title: Director- Chief Engineer

School/Institution/Organization: Lockheed Martin

Email: Andre.Williams@Lmco.com

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature) 8/26/16
(Date)

PLANNING COMMITTEE CERTIFICATION

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Noel F Wolber
(print)

Title: President

School/Institution/Organization: Infinite Printing

Email: Noel@Infinite-print.com

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Noel F Wolber

Signature

9-1-2016
Date

STEM.Planning 8-26-16

PLANNING COMMITTEE CERTIFICATION

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Name: Patricia A Woodside
(print)

Title: Director Marketing and Outreach

School/Institution/Organization: Aurora Flight Sciences

Email: pwoodside@aurora.aero

My signature certifies my willingness to be an active member of the Planning Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

Aug 26, 2016
(Date)

Appendix B

Advisory Committee Members

Eugene Brown
Community Outreach Director
Northern Virginia Checker Cab
docbrownrs@msn.com

John Cornicelli
Department of Homeland Security
john.cornicelli@gmail.com

Janet Graham
K-12 Math Content Specialist
Manassas City Public Schools
janetgraham@mcpsva.org

Angie Hall
Payroll, Human Resource and Benefits Manager
Able Moving and Storage
ahall@ablemoving.com

Pedro Hernandez
Supervisor of Instructional Technology and Innovation
Manassas City Public Schools
phernandez@mcpsva.org

Steve Kuhn
Chief Operating Officer
Able Moving and Storage
SKuhn@ablemoving.com

Susan McNamara
Supervisor of K-12 Career and Technical Education
Manassas City Public Schools
smcnamara@mcpsva.org

Diane Mucci
Dean Science and Applied Technologies
Northern Virginia Community College
dmucci@nvcc.edu

Carol Murphy
K-12 Science Content Specialist
Manassas City Public Schools
carolmurphy@mcpsva.org

Terita Norton
Senior Project Leader
The Aerospace Corporation
Terita.R.Norton@aero.org

Dr. Melissa Saunders
Executive Director of Student Achievement
Manassas City Public Schools
msaunders@mcpsva.org

Zuzana Steen
University and Academic Relations Manager
Micron Technology
zsteen@micron.com

Paul Steiner
CTE Administrator
Manassas City Public Schools
psteiner@mcpsva.org

Aaron Tolson
Operations Manager
Twin Air LLC
aaron@twinairllc.com

Andre Williams
Director/Chief Engineer
Lockheed Martin
andre.williams@lmco.com

Andrew Wilson
Acting Principal, Osbourn High School
Manassas City Public Schools
awilson@mcpsva.org

Noel Wolber
President/Business Owner
Infinite Printing
noel@infinite-Print.com

Patricia Woodside
Director of Marketing and Outreach
Aurora Flight Sciences
pwoodside@aurora.aero

Ramunda Young
Campus and Community Relations
Northern Virginia Community College
ryoung@nvcc.edu

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

Advisory Committee Member Agreement:

The Governor's STEM Academy at Osbourn High School (The Academy) depends on the Advisory Committee, made up of industry, business, higher education and government for guidance and support to ensure success.

As a member of the Advisory Committee, I will effectively:

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2. Contribute to The Academy's awareness of the workforce needs of the region and education/training requirements
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5. Provide on-going monitoring of programs, courses, and co-curricular initiatives to assure achievement of The Academy's goals and objectives
6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Eugene E. Brown
(Print)

Title: Community outreach Director

School/Institution/Organization: Northern Virginia Checker Cab

Email: docbrownrs@msn.com

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Eugene E. B
(Signature)

8/26/16
(Date)

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: JOHN CORNICELLI
(Print)

Title: Dept. of Homeland Security

School/Institution/Organization: NVCC

Email: JOHN.CORNICELLI@GMAIL.COM

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

26 AUG '16
(Date)

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: JANET GRAHAM
(Print)

Title: DIVISION MATH SPECIALIST K-12

School/Institution/Organization: MANASSAS CITY PUBLIC SCHOOLS

Email: janetgraham@mcpsva.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Janet Graham
(Signature)

8/26/16
(Date)

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Angie Hall
(Print)

Title: Payroll, HR + Emp Benefits Manager

School/Institution/Organization: Able Moving + Storage, Inc.

Email: ahall@ablemoving.com

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Angie Hall
Signature

8/31/16
Date

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

Advisory Committee Member Agreement:

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Pedro Hernandez
(Print)

Title: Supervisor of Digital Learning and Innovation

School/Institution/Organization: Manassas City Public Schools

Email: phernandez@mcpsva.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

9/2/16
Date

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: STEVE KUHN
(Print)

Title: COO

School/Institution/Organization: ABLE MOVING & STORAGE

Email: S KUHN @ ABLEMOVING.COM

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

8.31.16
Date

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Susan Ann McNamara
(Print)

Title: Supervisor of K-12 Career and Technical Education

School/Institution/Organization: Manassas City Public Schools

Email: smcnamara@mcpsva.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Susan Ann McNamara
Signature

8/26/16
Date

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Diane Mucci
(Print)

Title: Dean Science and Applied Technologies

School/Institution/Organization: Northern Virginia Community College

Email: dmucci@nvcc.edu

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Diane Mucci
Signature

08/30/16
Date

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

Advisory Committee Member Agreement:

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Carol Murphy
(Print)

Title: K12 Science Content Specialist

School/Institution/Organization: Manassas City Public Schools

Email: carolmurphy@mcpsva.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

8/31/16
Date

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Terita Norton
(Print)

Title: Senior Project Leader

School/Institution/Organization: The Aerospace Corporation

Email: Terita.R.Norton@aero.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

09/01/2016
Date

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Melissa Saunders
(Print)

Title: Executive Director of Student Achievement

School/Institution/Organization: Manassas City Public Schools

Email: msaunders@mcpsva.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

9/2/16
Date

STEM.Adv 8-26-16

Advisory Committee Certification

The Governor's STEM Academy at Osbourn High School

Advisory Committee Member Agreement:

The Governor's STEM Academy at Osbourn High School (Manassas City Public Schools) depends on the Advisory Committee, made up of industry, business, higher education, and government for guidance and support to ensure success.

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5. Provide ongoing monitoring of programs, courses, and co-curricular initiatives to assure achievement of the Academy's goals and objectives.
6. Serve as Ambassador of The Governor's STEM Academy at Osbourn High School to the community, businesses, industry, and government.

Name: Zuzana Steen
(print)

Title: University and Academic Relations Manager

School/Institution/Organization: Micron Technology, Inc.

Email: zsteen@micron.com

My signature certifies my willingness to be an active member of the combined Planning and Advisory Committee for The Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Zuzana K [illegible] 1/19/16

(Signature) (Date)

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Paul Steiner
(Print)

Title: CTE Administrator

School/Institution/Organization: Osbourn High School (MCPS)

Email: Psteiner@MCPSVA.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

8/26/16
(Date)

ADVISORY COMMITTEE CERTIFICATION

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Name: AARON TOLSON
(Print)

Title: OPERATIONS MANAGER

School/Institution/Organization: TWIN AIR LLC

Email: AARON@TWINAIRLLC.COM

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

Date 8/31/16

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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Name: Andre Williams
(Print)

Title: Director - Chief Engineer

School/Institution/Organization: Lockheed Martin

Email: Andre.Williams@LMCO.com

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

8/26/16
(Date)

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Noel F Wolber
(Print)

Title: President

School/Institution/Organization: Infinite Printing

Email: Noel@infinite-print.com

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Noel F Wolber

Signature

9/1/16

Date

STEM.Adv 8-26-16

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Patricia A. Woodside
(Print)

Title: Director Marketing and Outreach

School/Institution/Organization: Aurora Flight Sciences

Email: pwoodside@aurora.aero

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

(Signature)

Aug 26, 2016
(Date)

ADVISORY COMMITTEE CERTIFICATION

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Andrew Wilson
(Print)

Title: Acting Principal

School/Institution/Organization: Osbourn High School/Manassas City Pub. Schools

Email: awilson@mcpsva.org

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

Signature

Date 6/6/17

STEM.Adv 8-26-16

ADVISORY COMMITTEE CERTIFICATION

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6. Serve as Ambassador of The Academy to the community, businesses, industry and government

Name: Ramunda Young (Print)

Title: Campus and Community Relations

School/Institution/Organization: Northern Virginia Community College

Email: ~~ramunda~~ ryoung@nvcc.edu

My signature certified my willingness to be an active member of Advisory Committee for the Governor's STEM Academy at Osbourn High School described in the accompanying application for this distinguished designation.

R Young (Signature) 8/31/16 (Date)

STEM.Adv 8-26-16

Appendix C

The Governor's STEM Academy at OHS

STATEMENT OF ASSURANCES

The authorized signature on this page certifies to the VDOE that the authorized official assures that:

1. The Planning Committee has reviewed the provisions of the 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.

Dr. Catherine Magouyrk Superintendent of Schools, MCPS

Signature of Authorized Official

Date 9/7/16

Appendix D

Memorandum of Agreement Partnerships

Eugene Brown
Community Outreach Director
Northern Virginia Checker Cab
docbrownrs@msn.com

Angie Hall
Payroll, Human Resource and Benefits Manager
Able Moving and Storage
ahall@ablemoving.com

Steve Kuhn
Chief Operating Officer
Able Moving and Storage
SKuhn@ablemoving.com

Diane Mucci
Dean Science and Applied Technologies
Northern Virginia Community College
dmucci@nvcc.edu

Zuzana Steen
University and Academic Relations Manager
Micron Technology, Inc.
zsteen@micron.com

Aaron Tolson
Operations Manager
Twin Air, LLC
aaron@twinairllc.com

Andre Williams
Director/Chief Engineer
Lockheed Martin
andre.williams@lmco.com

Noel Wolber
President
Infinite Printing
noel@infinite-print.com

Patricia Woodside
Director of Marketing and Outreach
Aurora Flight Sciences
pwoodside@aurora.aero

Deborah Jones
President
Prince William Chamber of Commerce
djoes@pwchamber.org

Keith Scott
Sales Manager
T.A.C. Ceramic Tile Company
kscott@tacceramictile.com

James Casey
Assistant Professor
Virginia Serious Games Institute, George Mason University
jcasey9@gmu.edu

Jennifer Schock-Bolles
Executive Director
Project Mend a House
jennifer@pmahweb.org

DiJullio Jacobs
Community Outreach Representative
Aviation Institute of Maintenance
ooramm@aviationmaintenance.edu

Robert Crook
Service Manager
Miller Toyota
robertc@millertoyota.com

Caroline L. Shaaber
Executive Director
Impacto Youth
caroline.shaaber@impactoyouth.org

Debbie Haight
Executive Director
Cowork LLC/DBA Centerfuse
debbie@historicmanassasinc.org

Patrick Doering
Human Resource Manager
The Anderson Company, LLC
pdoering@theanderco.com

Juan Rivera
Airport Director
Manassas Regional Airport
jrivera@ci.manassas.va.us

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

PARTNERS and the **GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL** (The Academy) agree to enter into this Agreement to support The Academy's Career and Technical Education programs that will advance STEM careers. The Academy will provide enhanced opportunities in the areas of Engineering and Technology, Network Systems, and Transportation Operations. A major focus of the program will be to significantly increase the development and assessment of workplace readiness skills, "college-going" readiness, industry certifications and work-based learning opportunities that directly correlate to these workforce needs of the region.

MEMORANDUM OF AGREEMENT TIMEFRAME:

The MEMORANDUM OF AGREEMENT period shall be for the academic school year 2016-2017 and will be extended annually unless modified or terminated by a partner.

PARTNER'S AGREEMENTS:

The Governor's STEM Academy at Osbourn High School agrees to:

- Facilitate the mission and working of the Advisory and Planning Committee
- Provide and monitor comprehensive programs of studies in the Engineering and Technology, Network Systems, and Transportation Operations Pathways.
- Assure that curriculum is aligned with career pathways that meet the requirements for the Governor's Exemplary Standard Award Program, Workplace Readiness Skills for the Commonwealth of Virginia and the Virginia Standard or Advanced Diplomas with CTE Seals
- Deliver counseling and other services that promote STEM education, career pathways, educational advancement and employment opportunities
- Provide documentation and information as requested by the Department of Education
- Provide the required equipment, software and technical support to facilitate instruction
- Designate an academy point of contact for partners

Postsecondary Education Partners:

- Designate an individual who will serve as a contact person to serve as a liaison on the Advisory and Planning Committee
- Provide opportunities for dual enrollment courses, if articulation agreements exist, for students to earn transferable college credit

Business Partners:

- Designate an individual who will serve as a contact person to serve as a liaison on the Advisory and Planning Committee or in the capacity as a resource contact for the program departments
- Identify employment needs and opportunities in Manassas and in Northern Virginia STEM industries
- Provide subject matter expert resources and opportunities for students of The Academy to receive real world experiences through project-based learning, field trips, guest speakers, job shadowing, internships and mentorships
- Provide guidance and expertise to staff and/or students to promote **STEM** related teaching and learning
- Provide opportunities for: ✓ Internships ✓ Mentoring ✓ Job-Shadowing _____Project-Based Learning _____ Guest Speakers or _____Other _____ (Please check those that apply)

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

The Governor's STEM Academy at Osbourn High School

Paul [illegible] 8/26/16
Academy Administrator Date

Northern Virginia Director CAB
Name of Partner Organization

Eugene E. B[illegible] Eugene E. Brown 8/26/16
Partner Signature Date

Community Outreach Director
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

PARTNERS and the **GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL** (The Academy) agree to enter into this Agreement to support The Academy's Career and Technical Education programs that will advance STEM careers. The Academy will provide enhanced opportunities in the areas of Engineering and Technology, Network Systems, and Transportation Operations. A major focus of the program will be to significantly increase the development and assessment of workplace readiness skills, "college-going" readiness, industry certifications and work-based learning opportunities that directly correlate to these workforce needs of the region.

MEMORANDUM OF AGREEMENT TIMEFRAME:

The MEMORANDUM OF AGREEMENT period shall be for the academic school year 2016-2017 and will be extended annually unless modified or terminated by a partner.

PARTNER'S AGREEMENTS:

The Governor's STEM Academy at Osbourn High School agrees to:

- Facilitate the mission and working of the Advisory and Planning Committee
- Provide and monitor comprehensive programs of studies in the Engineering and Technology, Network Systems, and Transportation Operations Pathways.
- Assure that curriculum is aligned with career pathways that meet the requirements for the Governor's Exemplary Standard Award Program, Workplace Readiness Skills for the Commonwealth of Virginia and the Virginia Standard or Advanced Diplomas with CTE Seals
- Deliver counseling and other services that promote STEM education, career pathways, educational advancement and employment opportunities
- Provide documentation and information as requested by the Department of Education
- Provide the required equipment, software and technical support to facilitate instruction
- Designate an academy point of contact for partners

Postsecondary Education Partners:

- Designate an individual who will serve as a contact person to serve as a liaison on the Advisory and Planning Committee
- Provide opportunities for dual enrollment courses, if articulation agreements exist, for students to earn transferable college credit

Business Partners:

- Designate an individual who will serve as a contact person to serve as a liaison on the Advisory and Planning Committee or in the capacity as a resource contact for the program departments
- Identify employment needs and opportunities in Manassas and in Northern Virginia STEM industries
- Provide subject matter expert resources and opportunities for students of The Academy to receive real world experiences through project-based learning, field trips, guest speakers, job shadowing, internships and mentorships
- Provide guidance and expertise to staff and/or students to promote **STEM** related teaching and learning
- Provide opportunities for: ✓ Internships ✓ Mentoring ✓ Job-Shadowing ✓ Project-Based Learning ✓ Guest Speakers or ____ Other _____
  (Please check those that apply)

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

The Governor's STEM Academy at Osbourn High School

Paul Atkins — 8/31/16
Academy Administrator — Date

Able Moving + Storage, Inc.
Name of Partner Organization

Angie Hall — 8/31/2016
Partner Signature — Date

Payroll HR + Employee Ben. Manager
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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- Provide opportunities for: _____Internships _____Mentoring _____Job-Shadowing _____Project-Based Learning _____ Guest Speakers or _____Other _____ (Please check those that apply)

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The Governor's STEM Academy at Osbourn High School

Academy Administrator — Date: 8/31/16

ABLE MOVING & STORAGE
Name of Partner Organization

Partner Signature: Steve Kuhn — Date: F.36.16

COO
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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Postsecondary Education Partners:

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- Provide opportunities for dual enrollment courses, if articulation agreements exist, for students to earn transferable college credit

Business Partners:

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- Provide guidance and expertise to staff and/or students to promote **STEM** related teaching and learning
- Provide opportunities for: _____Internships _____Mentoring _____Job-Shadowing _____Project-Based Learning _____ Guest Speakers or _____Other _____ (Please check those that apply)

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The Governor's STEM Academy at Osbourn High School

Academy Administrator _____ Date 9/6/16

Northern Virginia Community College
Name of Partner Organization

Partner Signature _____ Date 09/01/16

Dean Science & Applied Technologies
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

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THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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- Provide documentation and information as requested by the Department of Education
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- Designate an academy point of contact for partners

Postsecondary Education Partners: **Northern Virginia Community College, and future partners agree to:**

- Designate an individual who will serve as a contact person to serve as a liaison on the Advisory Committee
- Provide opportunities for Dual Enrollment courses, if articulation agreements exist, for students to earn transferable college credit

Business Partners: Current and future partners agree to:

- Designate an individual who will serve as a contact person to serve as a liaison on the Advisory and Planning Committee or in the capacity as a resource contact for the program departments
- Identify employment needs and opportunities in Manassas, and in Northern Virginia STEM industries.
- Provide subject matter expert resources and opportunities for Academy students to receive real world experiences through project-based learning, field trips, guest speakers, job shadowing, internships, and mentorships.
- Provide guidance and expertise to staff and/or students to promote **STEM** related teaching and learning
- Provide opportunities for ____Internships, ____Mentoring, ____Job-Shadowing, ____Project-Based Learning, ✓ Guest Speakers, or ✓ Other (Tours)
  (Please check those that apply)

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

The New Commonwealth Governor's STEM Academy

Zuzana Steen
Academy Administrator

Micron Technology, Inc.
Name of Partner Organization

Signature

Title (please include site and location)

PARTNER

8/24/16
Date

Shawn McGuire K-12 Supervisor Career & Technical Ed. 9/2/16

8/24/16
Date

University + Academic Relations Manager

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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  (Please check those that apply)

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The Governor's STEM Academy at Osbourn High School

[signature] 8/31/16
Academy Administrator Date

Twin Air LLC
Name of Partner Organization

[signature] 8/31/16
Partner Signature Aaron Tolson Date

Operations Manager, Manassas, VA
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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The Governor's STEM Academy at Osbourn High School

Paul [illegible] 8/26/16
Academy Administrator Date

Lockheed Martin
Name of Partner Organization

Andre Williams 8/26/16
Partner Signature Andre Williams Date

Director - Chief Engineer, Manassas, VA
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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The Governor's STEM Academy at Osbourn High School

Academy Administrator — Date: 9-1-16

____Infinite Printing_____
Name of Partner Organization

Partner Signature — Date: 9-1-16

__President – 9113 Euclid Ave. Manassas, VA 20110_____
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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The Governor's STEM Academy at Osbourn High School

_____ 8/26/16
Academy Administrator Date

Aurora Flight Sciences
Name of Partner Organization

_____ 8/26/2016
Partner Signature Patricia A Woodside Date

Director Marketing and Outreach
Title (please include site and location)

STEM.MOA 8-26-16

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

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- Provide opportunities for (please check those that apply):
  ____Internships ____Mentoring ____Job-Shadowing ____Project-Based Learning
  _X_ Guest Speakers of _X_ Other Career Fairs, Speed Networking + Volunteer Opportunities
  and

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

The Governor's STEM Academy at Osbourn High School

Paul Hamer
Academy Administrator

6/7/17
Date

Prince William Chamber
Name of Partner Organization

Deborah Gross, President & CEO
Partner Signature

6-7-17
Date

President + CEO Manassas, VA
Title (please include site and location)

STEM.MOA 4-20-17

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

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STEM.MOA 4-20-17

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  ____Guest Speakers or X Other Jet Camps

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The Governor's STEM Academy at Osbourn High School

Paul Steiner 6/7/17
Academy Administrator Date

Aviation Institute of Maintenance
Name of Partner Organization

Chris Dillion 6/7/2017
Partner Signature Date

Community Outreach Representative
Title (please include site and location)

STEM.MOA 4-20-17

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

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  _____Guest Speakers or _____Other _____

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The Governor's STEM Academy at Osbourn High School

Paul Steiner — 6/7/17
Academy Administrator — Date

Virginia Serious Games Institute : George Mason
Name of Partner Organization

6/7/17
Partner Signature — Date

Assoc. Director VSGI
Title (please include site and location)

STEM.MOA 4-20-17

MEMORANDUM OF AGREEMENT

BETWEEN PARTNERS

AND

THE GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL

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  _____Guest Speakers or __X__Other __Mock Interviews__

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The Governor's STEM Academy at Osbourn High School

Paul [illegible] — 6/8/17
Academy Administrator — Date

Robert Crook
Name of Partner Organization

X Robert J Crook — 6-8-17
Partner Signature — Date

SERVICE MANAGER MILLER TOYOTA
Title (please include site and location)

STEM.MOA 4-20-17

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  X Guest Speakers or ____Other _____

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The Governor's STEM Academy at Osbourn High School

Paul Steiner — 6/7/17
Academy Administrator — Date

Project Mend-A-House
Name of Partner Organization

Sherrick Bolton — June 1, 2017
Partner Signature — Date

Executive Director
Title (please include site and location)

STEM.MOA 4-20-17

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The Governor's STEM Academy at Osbourn High School

Paul Steiner _____ 6/7/17 _____
Academy Administrator Date

T.A.C. CERAMIC TILE CO.
Name of Partner Organization

_____ 6/7/17 _____
Partner Signature Date

SALES MANAGER
Title (please include site and location)

STEM.MOA 4-20-17

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  ____ Guest Speakers or _x_ Other mock interviews

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The Governor's STEM Academy at Osbourn High School

Anson N. Melton — 6/13/17
Academy Administrator — Date

The Anderson Co. LLC
Name of Partner Organization

6/13/17
Partner Signature — Date

HR mgr — 12150 Tac Ct Manassas, VA 20109
Title — (please include site and location)

STEM.MOA 4-20-17

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  X Guest Speakers or X Other Collaborative Work Environment

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The Governor's STEM Academy at Osbourn High School

Academy Administrator — Date: 6/13/17

Cowork LLC / DBA CenterFuse
Name of Partner Organization

Partner Signature — Date: 06/13/2017

Executive Director, Manassas 9073 Center St.
Title (please include site and location)

STEM.MOA 4-20-17

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  X Guest Speakers or X Other CENTERPIECE WITH PROGRAM FACILITATION FROM IMPACTO YOUTH & WORKFORCE DEVELOPMENT.

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The Governor's STEM Academy at Osbourn High School

[signature] 6/13/17
Academy Administrator Date

IMPACTO YOUTH
Name of Partner Organization

[signature] 6/13/2017
Partner Signature Date

EXECUTIVE DIRECTOR - IMPACTO YOUTH 9073 CENTER STREET MANASSAS VA 20110
Title (please include site and location)

STEM.MOA 4-20-17

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The Governor's STEM Academy at Osbourn High School

Academy Administrator — Date: 6/30/17

Manassas Regional Airport
Name of Partner Organization

Partner Signature — Date: 6/30/17

Airport Director — 10600 Harry J. Parrish Blvd.
Title — (please include site and location) Manassas, VA 20112
703-361-1882

STEM.MOA 4-20-17

Appendix E

CareerClusters™ PATHWAYS TO COLLEGE & CAREER READINESS
Science, Technology, Engineering & Mathematics

Commonwealth of Virginia Plan of Study

Division: Manassas City Public Schools
School: Osbourn High School

Cluster: Science, Technology, Engineering & Mathematics **Pathway:** Engineering and Technology Date: December 13, 2016

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								• Aeronautical/Aerospace Engineer • Agricultural Engineer/Technician • Application Engineer • Architectural Engineer • Automotive Engineer • Biomedical/Biotechnology Engineer • CAD Technician • Chemical Engineer • Civil Engineer • Communications Engineer • Computer Engineer • Computer Hardware Engineer • Computer Programmer • Construction Engineer • Drafter • Electrical/Electronic/Engineering Technician • Electrical Engineer • Geothermal Engineer • Industrial Engineer/Technician • Manufacturing Engineer/Technician • Marine Engineer • Mechanical Engineer • Metallurgist • Mining Engineer • Nuclear Engineer • Petroleum Engineer • Product/Process Engineer • Survey Technician • Systems Engineer • Transportation Engineer
MIDDLE	7	English 7 (1110)	Math 7 (3111)	Life Science (4115)	U S History (2354)	Other electives	Gateway to Technology Specialties (8479) PLTW	
MIDDLE	8	English 8 (1120)	Algebra I (3130)	Physical Science (4125)	Civics & Economics (2357)	Other electives	Gateway to Technology Specialties (8479) PLTW	
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): **Naviance**								
SECONDARY	9	English (1130)	Geometry (3143)	Earth Sciences (4210)	World History/Geography I (2215)	Economics and Personal Finance (6120) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE) Technology of Robotic Design Aerospace Engineering Technology (8428) PLTW College Success Skills (100) SDV	Intro to Engineering Design (8439) PLTW	
SECONDARY	10	English (1140)	Algebra II (3135)	AP Biology (4310)	World History/Geography II (2216)		Principles of Engineering (8441) PLTW	
SECONDARY	11	English (1150)	Mathematical Analysis/Pre-Calculus (3162)	AP Chemistry (4410)	US/VA History (2360)		Digital Electronics (8440) PLTW	
SECONDARY	12	English (1160) DE	AP Calculus (3177)	AP Physics (4510) or Principles of Technology I and II (9811/9812)	US/VA Government (2440) DE		Engineering Design and Development (8443) PLTW	
		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)

Engineering Technology Examination; National Career Readiness Certificate; Pre-Engineering/Engineering Technology Assessment (NOCTI); Virginia Workplace Readiness Assessment (NOCTI) and IC3 Certification (Certiport); Workplace Readiness Skills for the Commonwealth (CTECS), W!se Certification (Working in Support of Education)

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

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

Postsecondary: Placement Assessments such as 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	Bachelor's Degree	Postgraduate Degree
Engineering Technology	Engineering Technology AAS – Mechanical Engineering Technology Spec.	B.S. Engineering Technology	

College: Northern Virginia Community College **School Division(s):** Manassas City Public Schools

Postsecondary: Placement Assessments such as Virginia Placement Test

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	College Comp I (ENG 111), if not taken as DE	Precalculus with Trig (MTH 166), if not taken as DE		Humanities/Fine Arts		Introduction to Computing (CSC 110)	Engineering Graphics (ENR 115)	College Success Skills (SDV 100)
Year 1 2nd Semester	College Comp I (ENG 112), if not taken as DE			Elective	Computer Aided Drafting and Design 1 (CAD 201)	Technical Drawing (CAD 140)	Processes of Industry (MEC 112)	Automated Manufacturing Tech (MEC 118)
Year 2 1st Semester			General College Physics 1 (PHY 201)		Statistics & Strength of Materials (EGR 130)	Fluid Mechanics (MEC 265)	Computer Aided Drafting and Design II (CAD 202)	
Year 2 2nd Semester			General College Physics II (PHY 202)		Computer Aided Drafting (CAD 233)	Structural Systems (CIV 210)		
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:
AutoDesk
AutoCAD

Additional Suggested Learning Opportunities:
Work-Based Learning:
☒ Cooperative Education ☒ Internship ☐ Mentorship
☐ Job Shadowing ☐ Service Learning Project ☐ Registered Apprenticeship

UNIVERSITY

University/College: George Mason University, Old Dominion University
Degree or Major: Civil and Infrastructure Engineering
Number of Articulated CC Credits: Courses accepted on a case by case basis.

Notes:

CareerClusters™ PATHWAYS TO COLLEGE & CAREER READINESS
Information Technology

Commonwealth of Virginia Plan of Study

Division: Manassas City Public Schools
School: Osbourn High School

Cluster: Information Technology **Pathway:** Network Systems Date: December 13, 2016

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		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)	Other elective	Gateway to Technology Specialties (8479) PLTW	• Communications Analyst • Information Systems Administrator • Information Systems Operator • Information Technology Engineer • Network Administrator • Network Architect • Network Engineer • Network Manager • Network Operations Analyst • Network Security Analyst • PC Support/User Specialist • Systems Administrator • Technical Support Specialist • Telecommunications Network Technician
MIDDLE	8	English 8 (1120)	Math 8 (3112) Algebra I (3130)	Physical Science (4125)	Civics & Economics (2357)	Computer Solutions (6610/6609)	Gateway to Technology Specialties (8479) PLTW	
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): **Naviance**								
SECONDARY	9	English (1130)	Geometry (3143)	Earth Sciences (4210)	World History/ Geography I (2215)	Economics and Personal Finance (6120) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE): Computer Information Systems (6612/6614) Adv Computer Inf Systems (6613/6615) Adv Database Design and Management (6661) Database Design and Management with PL/SQL (6662) Computer Systems Technology (I 8622, II 8623) Geospatial Technology I (8423)	Intro to Engineering Design (8439) PLTW	
SECONDARY	10	English (1140)	Algebra II (3135)	Biology (4310)	World History/ Geography II (2216)		Database Design and Management (6660)	
SECONDARY	11	English (1150)	Advanced Mathematics (3160)	Chemistry (4410)	US/VA History (2360)		Computer Network Software Operations (6650)	
SECONDARY	12	English 1160 (DE)	Mathematical Analysis/Pre-Calculus (3162) AP Statistics (3192)	Physics (4510) or Principles of Technology I and II (9811/9812)	AP US/VA Government(2440)		Advanced Computer Network Software Operations (6651)	
SECONDARY	**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.) A+ Certification (2006 Objectives), Brainbench Network Administration Certifications, Brainbench Systems Administration Certifications, Brainbench Technical Support Certifications, Certified Internet Webmaster Associate, Certified Novell Administrator (CNA), Computer Networking Fundamentals Assessment, Computer Repair Technology Assessment, Fundamentals of Wireless LANs Examination, IC3Certification, IT Essentials 1 Examination (PC Hardware and Software), IT Essentials 2 Examination (Network Operating Systems), Linux+ Certification, Microsoft Certified Application Specialist (MCAS), Microsoft Certified Professional (any Microsoft Professional Certification exam), Microsoft Office Specialist (MOS), Network+ Certification, UNIX Examination, Virginia Workplace Readiness Assessment and IC3 Certification , Workplace Readiness Skills for the Commonwealth (CTECS), W!se Certification (Working in Support of Education)	**Additional Learning Opportunities:** CTSO Organization(s): ☐ DECA ☒ FBLA ☐ FCCLA ☐ FFA ☐ FEA ☐ HOSA ☐ SkillsUSA ☐ TSA **Work-Based Learning:** ☒ Career Research ☒ Cooperative Education ☒ Internship ☒ Mentorship ☒ Job Shadowing ☒ Service Learning Project ☐ Student Apprenticeship
Postsecondary: Placement Assessments such as 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**	**Bachelor's Degree**	**Postgraduate Degree**
	Network Systems	Computer Science – AS (Transfer) Information Technology – AS (Transfer)	BS Information Technology OR Computer Science	MS Information Technology OR Computer Science

Page 2

College: Northern Virginia Community College **School Division(s):** Manassas City Public Schools

Postsecondary: Placement Assessments such as Virginia Placement Test or COMPASS

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	If needed, College Comp I (ENG 111)	Precalculus (MTH 163) OR higher		History Elective / Social Science Elective		College Success Skills (SDV 100)	Intro to Computer Applications and Concepts (ITE 115)	
Year 1 2nd Semester	If needed, College Comp I (ENG 112)	Applied Calculus 1 (MTH 271)			Multimedia Software (ITE 170)	Software Design (ITP 100)	Intro to Telecommunications (ITN 100)	Lifetime Fitness and Wellness (PED 116)
Year 2 1st Semester	SPD Elective (3 cr)		Physical or Life Science elective with Lab	Humanities / Fine Arts Elective (3 cr)	Introduction to Communication (CST 110)	JAVA Programming 1 (ITP 120) OR C++ Program 1 (ITP 132)		
Year 2 2nd Semester			Physical or Life Science elective with Lab	Humanities / Fine Arts Elective Social Science Elective	Advanced Database Management (ITD 256)	PC Hardware and OS Architecture (ITE 221)		

	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: A+ Computer Hardware Certification, CCNA Cisco Certified Network Academy, CCNP Cisco Certified Network Professional, CCENT Cisco Certified Entry Networking Technician, Certified Fiber Optic Technician, Comp TIA A+, MCP Microsoft Certified Professional, MCP Microsoft Certified Professional + Internet, MCSE Microsoft Certified Systems Engineer, MOS Microsoft Office Specialist, Network Cabling Specialist, Network+, Oracle Database Administration, Prometric APTC (Authorized Prometric Testing Center), Security+	**Additional Suggested Learning Opportunities:** **Work-Based Learning:** ☒ Cooperative Education ☒ Internship ☒ Mentorship ☐ Job Shadowing ☐ Service Learning Project ☒ Registered Apprenticeship
UNIVERSITY	University/College: George Mason, Virginia Tech Degree or Major: BS Information Technology Number of Articulated CC Credits: Courses accepted on a case-by-case basis. General Ed courses are not waived and students will enter OHS as lower classman.
Notes:	

CareerClusters™ PATHWAYS TO COLLEGE & CAREER READINESS
Transportation, Distribution & Logistics

Commonwealth of Virginia Plan of Study

Division: Manassas City Public Schools
School: Osbourn High School

Cluster: Transportation, Distribution & Logistics **Pathway:** Facility and Mobile Equipment Maintenance Date: December 13, 2016

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								• Technician • Aircraft Mechanic/Service Technician • Automotive Service Technician/ Mechanic • Avionics Technician • Bus/Truck Mechanic • Collision Repair Technician • Diesel Engine Specialist • Diesel Service Technician • Electrical/Electronic Installer/ Repairer • Electrical/Electronic Technician • Facility Maintenance Manager/ Engineer • Industrial Electrician • Industrial Equipment Mechanic • Motorboat Mechanic • Off-Road Equipment Technician • Rail Locomotive/Car Mechanic/ Repairer • Service Manager • Service Writer • Ship Mechanic/Repairer • Small Engine Mechanic • Stationary Engineer
MIDDLE	7	English 7 (1110)	Math 7 (3111)	Life Science (4115)	U S History (2354)	Other electives	Gateway to Technology Specialties (8479) PLTW	
MIDDLE	8	English 8 (1120)	Math 8/Pre-Algebra (3112)	Physical Science (4125)	Civics & Economics (2357)	Other electives	Gateway to Technology Specialties (8479) PLTW	
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): Naviance								
SECONDARY	9	English (1130)	Algebra I (3130)	Earth Sciences (4210)	World History/ Geography I (2215)	Economics and Personal Finance Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE)	Intro to Engineering Design (8439) PLTW	
SECONDARY	10	English (1140)	Geometry (3143)	Biology (4310)	World History/ Geography II (2216)		Automotive Technology I (8506)	
SECONDARY	11	English (1150)	Algebra II (3135)	Chemistry (4410)	US/VA History (2360)		Automotive Technology II (8507)	
SECONDARY	12	English (1160) DE	Advanced Mathematics (3160) Functions/Trig DE	AP Physics (4510) or Principles of Technology I and II (9811/9812)	US/VA Government(2440) DE		Automotive Technology III (8508)	
	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:	**Additional Learning Opportunities:**
http://www.cteresource.org/apg (Go to Certification – License Section) Automotive Technician Examination (ASE) (National Institute for Automotive Service Excellence) Automotive Youth Educational Systems (AYES) Exit Examinations National Automotive Technicians Education Foundation (NATEF) End of Program Test Series Examinations (NATEF) Workplace Readiness Skills for the Commonwealth (CTECS) W!SE Certification(Working in Support of Education)	CTSO Organization(s): ☐ DECA ☐ FBLA ☐ FCCLA ☐ FFA ☐ FEA ☐ HOSA ☒ SkillsUSA ☐ TSA **Work-Based Learning:** ☒ Career Research ☐ Cooperative Education ☒ Internship ☒ Mentorship ☒ Job Shadowing ☒ Service Learning Project ☒ Student Apprenticeship
Postsecondary: Placement Assessments such as 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	Bachelor's Degree	Postgraduate Degree
Transportation Operations	Heavy Equipment Operations – CERT Diesel Mechanics - CERT Automotive – AAS	Locally Determined	Locally Determined

College: Northern Virginia Community College **School Division(s):** Manassas City Public Schools

Postsecondary: Placement Assessments such as Virginia Placement Test or COMPASS

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	College Com. 1 (ENG 111)				Intro to Auto Shop Practices (AUT 100)	Auto Engines 1 (AUT 111)	Auto Elec. 1 (AUT 241)	LFT FIT/WELL SDV 100 (PED 116) College Success Skills (SDV 100)
Year 1 2nd Semester		Math for Lib. Arts 1 (MTH 151)	Intro to Physics 1 (PHY 101) Survey of Applied Physics (PHY 130)		Auto Electric 2 (AUT 242)	Auto Braking Systems (AIT 265)	Auto Align Suspension and Steering (AUT 266)	Auto Fuel Systems (AUT 121) Auto Climate Control (AUT 236)
Year 2 1st Semester					Auto Engines 2 (AUT 112)	Auto Fuel Systems 2 (AUT 122)	Auto Power Trains 1 (AUT 141)	
Year 2 2nd Semester	Intro to Communication (CST 110)				Auto Power Trains 2 (AUT 142)	Auto Electronics (AUT 245)		

	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: ASE Student Certification; Automotive Technician Advanced Assessment; Automotive Technician Core Assessment; College and Work Readiness Assessment (CWRA+); Customer Service Examination; Customer Service Specialist (CSS) Examination; Mobile Communications and Electronics Installer (MCEI) Examination; National Career Readiness Assessment; Professional Communication Certification Examination; Workplace Readiness Skills for the Commonwealth Examination	**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:		

Appendix F

OHS Bell Schedule 2016-2017

Regular Bell Schedule

8:10	Warning Bell
8:15 – 9:37	1st Block
9:47 – 10:24	Eagle Block
	First Lunch
10:24– 10:49	**Lunch #1**
10:54 – 12:19	2nd Block
	Second Lunch
10:31 – 10:54	First Half of 2nd Block
10:54 – 11:19	**Lunch #2**
11:24 – 12:19	Second Half of 2nd Block
	Third Lunch
10:31 – 11:24	First Half of 2nd Block
11:24 – 11:49	**Lunch #3**
11:54 – 12:19	Second Half of 2nd Block
	Fourth Lunch
10:31 – 11:54	2nd Block
11:54 – 12:19	**Lunch #4**
12:26 – 1:47	3rd Block
1:54 – 3:15	4th Block
3:15	Students Dismissed
3:35	Teachers Depart

Appendix G

CERTIFICATE OF INSURANCE

ISSUE DATE 02/26/2016

PRODUCER

Risk Management Programs, Inc.
5 Franklin Road SW
Roanoke, VA 24016

THIS CERTIFICATE OF INSURANCE IS ISSUED AS A MATTER OF INFORMATION ONLY. IT CONFERS NO RIGHTS UPON THE THIRD PARTY REQUESTING THE CERTIFICATE BEYOND WHAT THE REFERENCED POLICY OF INSURANCE EXPRESSLY PROVIDES. THIS CERTIFICATE OF INSURANCE DOES NOT EXTEND, AMEND, OR ALTER THE COVERAGE, TERMS, EXCLUSIONS, OR CONDITIONS AFFORDED BY THE POLICY REFERENCED IN THIS CERTIFICATE OF INSURANCE.

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A	Virginia Association of Counties Group Self-Insurance Risk Pool
COMPANY LETTER B	
COMPANY LETTER C	
COMPANY LETTER D	
COMPANY LETTER E	

INSURED

Manassas City Public Schools
PO Box 520
Manassas, VA 20108

COVERAGES

THIS IS TO CERTIFY THAT 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. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR OWNER'S & CONTRACTOR'S PROT. X 0 RETENTION	VA-MA-272B-17	07/01/2016	07/01/2017	GENERAL AGGREGATE PRODUCTS-COMP/OP PERSONAL & ADV. INJURY EACH OCCURRENCE FIRE DAMAGE (Any one fire) MED. EXPENSE (Any one person)	$ N/A $ 6,000,000 $ 6,000,000 $ 6,000,000 $ 500,000 $ 5,000
A	AUTOMOBILE LIABILITY ANY AUTO X ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS GARAGE LIABILITY X 0 RETENTION	VA-MA-272B-17	07/01/2016	07/01/2017	COMBINED SINGLE LIMIT BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE	$ 6,000,000 $ $ $
	EXCESS LIABILITY UMBRELLA FORM OTHER THAN UMBRELLA FORM				EACH OCCURRENCE AGGREGATE	$ $
A	OTHER Property Auto Physical Damage Crime School Leaders	VA-MA-272B-17 VA-MA-272B-17 VA-MA-272B-17 VA-MA-272B-17	07/01/2016 07/01/2016 07/01/2016 07/01/2016	07/01/2017 07/01/2017 07/01/2017 07/01/2017	$1,000 Ded/Blanket per schedule on file $1,000 Comprehensive$ 1,000 Collision $250,000 Blanket, $250 Deductible $ Ded $ 6,000,000 Limit	

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

Renewal Certificate - Coverage includes Student Accident - Standard Plan.

CERTIFICATE HOLDER

Manassas City Public Schools
PO Box 520
Manassas, VA 20108

AUTHORIZED REPRESENTATIVE

Barbara Reed-Williams

Appendix H

GOVERNOR'S STEM ACADEMY AT OSBOURN HIGH SCHOOL START-UP BUDGET

A – Director Costs	TOTAL			
	$5000 Planning Grant Perkins Funds	Perkins Funds	Other Funds (Local or grant funds to be described in Budget Narrative)	In-Kind
1. Personnel – 1000			168,000	
2. Employee Benefits – 2000			42,000	
3. Purchased/ Contractual Services – 3000			2,000	
4. Internal Services – 4000			2,000	
5. Staff Development – 5000	2,500	5,000	5,000	
6. Summer Component Activities – 5000			7,500	
7. Travel – 5000	1,000		1,500	
8. Contractual Services – 5000		2,000	14,000	
9. Materials and Supplies – 6000			5,500	
10. Equipment – 8000	1,500	20,000	25,000	
11. Facilities – 8000			5,000	
B - Indirect Costs *				
TOTAL	$5,000	$27,000	$277,500	

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