

Virginia Board of Education Agenda Item



Agenda Item: G.

Date: April 24, 2014

Title	Final Review of Request for Approval of an Innovative Program Opening Prior to Labor Day from Danville City Schools Academy for Engineering and Technology (AET)		
Presenter	Ms. Anne D. Wescott, Assistant Superintendent for Policy and Communications Dr. Edward Newsome Jr., Superintendent, Danville City Schools		
E-mail	Anne.Wescott@doe.virginia.gov	Phone	(804) 225-2403

Purpose of Presentation:

Action required by state or federal law or regulation.

Previous Review or Action:

Previous review and action. Specify date and action taken below:

Date: March 27, 2014

Action: First review

Action Requested:

Final review: Action requested at this meeting.

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

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

Goal 6: The review of the request to waive the requirement that the school year would begin prior to Labor Day, pursuant to § 22.1-79.1 of the *Code of Virginia* relates to the goal that the Board will provide leadership in the development and implementation of state and federal laws and regulations in ways that provide sound policies for student success.

Background Information and Statutory Authority:

Section 22.1-79.1 of the *Code of Virginia* prohibits local school boards from adopting school calendars that require schools to open prior to Labor Day unless a waiver is granted by the Board for "good cause." The conditions under which the Board may grant such waivers are outlined in the *Code*. The provision that permits the Board to approve a waiver for an experimental or innovative program may be found in § 22.1-79.1 as follows:

§ 22.1-79.1. Opening of the school year; approvals for certain alternative schedules.

- A. Each local school board shall set the school calendar so that the first day students are required to attend school shall be after Labor Day. The Board of Education may waive this requirement based on a school board certifying that it meets one of the good cause requirements of subsection B.
- B. For purposes of this section, "good cause" means:
 - 1. A school division has been closed an average of eight days per year during any five of the last 10 years because of severe weather conditions, energy shortages, power failures, or other emergency situations;
 - 2. A school division is providing, in the school year for which the waiver is sought, an instructional program or programs in one or more of its elementary or middle or high schools, excluding Virtual Virginia, which are dependent on and provided in one or more elementary or middle or high schools of another school division that qualifies for such waiver. However, any waiver granted by the Board of Education pursuant to this subdivision shall only apply to the opening date for those schools where such dependent programs are provided;
 - 3. A school division is providing its students, in the school year for which the waiver is sought, with an experimental or innovative program which requires an earlier opening date than that established in subsection A of this section and which has been approved by the Department of Education pursuant to the regulations of the Board of Education establishing standards for accrediting public schools. However, any waiver or extension of the school year granted by the Board of Education pursuant to this subdivision or its standards for accrediting public schools for such an experimental or innovative program shall only apply to the opening date for those schools where such experimental or innovative programs are offered generally to the student body of the school. For the purposes of this subdivision, experimental or innovative programs shall include instructional programs that are offered on a year-round basis by the school division in one or more of its elementary or middle or high schools; or
 - 4. A school division is entirely surrounded by a school division that has an opening date prior to Labor Day in the school year for which the waiver is sought. Such school division may open schools on the same opening date as the surrounding school division....

For the 2013-2014 school year, 57 school divisions have a waiver for weather-related reasons, six have dependent programs, ten are entirely surrounded by a school division that has an opening date prior to Labor Day, three school divisions have one or more schools with waivers because they are year-round schools, and two school divisions have waivers for innovative or experimental programs that are not year-round schools. Danville Public Schools has had a weather-related waiver for many years because it is entirely surrounded by Pittsylvania County, which has a weather-related waiver, but it is in jeopardy of losing its waiver because Pittsylvania County no longer meets the requirement of having been closed for an average of eight days per year during any five of the last 10 years because of severe weather conditions.

However, the 2012 General Assembly added language in the Appropriation Act to maintain current waivers, and the 2013 General Assembly extended the waiver through the 2013-2014 school year. The 2014-2016

Budget Bill – which has not yet been approved by the General Assembly – would extend the waiver for two additional years. The language says:

To provide additional flexibility, notwithstanding the provisions of § 22.1-79.1 of the Code of Virginia, any school division that was granted a waiver regarding the opening date of the school year for the 2011-12 school year under the good cause requirements shall continue to be granted a waiver for the 2014-15 school year and the 2015-16 school year.

If the General Assembly approves the budget with this language, Danville Public Schools will be able to open school before Labor Day for the next two years. Otherwise, it will not be eligible to open school before Labor Day unless the Board approves this waiver.

Summary of Important Issues:

Danville City Schools is basing its waiver request on an innovative program – the Academy for Engineering and Technology (AET). Stated benefits of the AET program include:

- The opportunity to earn college credits in engineering and technology;
- Credits may transfer to other ABET-accredited universities, saving up to \$8,000;
- Gain valuable knowledge and experience in careers for which employers are hiring;
- Opportunities for a paid internship within the fields of engineering and technology;
- Earn up to \$2,000: ELITE (Experiential Learning in Technology & Engineering) internships (\$1,500) and/or Industry Fundamentals (\$500);
- Explore various engineering and technology career paths;
- Experience state-of-the-art engineering and technology within advanced manufacturing;
- Connect with a world-class industry for potential long-term employment; and
- Gain marketable work skills for college and/or employment upon high school graduation.

Elementary Schools (6); Middle Schools (2); and High Schools (2)

The Pre-K, elementary, middle and high schools will provide summer enrichment camps and summer school during the 2014-2015 school year. Students participating in the summer enrichment opportunities will begin classes in June and end classes in July. In its waiver request, Danville City Schools indicates that students will benefit from the additional academic support as well as the opportunity to prevent summer reading loss. Danville lists the following benefits associated with summer enrichment:

- Literacy and Math Enrichment
- Credit Recovery
- Graduation Requirements
- Early Learning Opportunity
- Ninth Grade Transition Preparation

High Schools Only

The AET program is offered through a partnership between Virginia State University (VSU) and the New College Institute (NCI) to students from the Danville, Martinsville and Henry County school divisions. Rising juniors enrolled in the AET program will have the opportunity to choose between two

tracks of study: engineering or technology. Danville Public Schools seeks to offer the following to students:

- Dual enrollment opportunities for students with local colleges and universities;
- Career exploration and collaboration and programs between middle and high schools;
- Instructional collaboration and internship participation with Danville Community College;
- Student internships with Danville Regional Medical Center;
- Alignment with school year calendars in Pittsylvania County, Henry County and Martinsville City public school divisions; and
- Participation in the NASA program in Martinsville City Schools.

In its waiver request, Danville City Schools indicates that schools will benefit from a pre-Labor Day opening because they will be able to begin their coursework early, and, at the end of the school year, they will have the opportunity to become gainfully employed in internships with partnering industries.

A copy of the complete package submitted by Danville City Schools is attached.

Impact on Resources: The impact on resources is not expected to be significant.

Timetable for Further Review/Action:

Following the April 24 meeting, Department of Education staff will notify the School Board and the Superintendent of Danville Public Schools of the decision of the Board of Education.

Superintendent's Recommendation:

The Superintendent of Public Instruction recommends that the Board of Education deny Danville Public Schools' request for its elementary and middle schools to begin school prior to Labor Day, but to approve the request for its high schools to begin schools before Labor Day. The proposal for the elementary and middle schools do not comport with the provisions of § 22.1-79.1 of the *Code of Virginia*.

**Guidelines for Considering and Approving Requests
for Pre-Labor Day Openings
Approved by the Board of Education on March 28, 2013**

Statutory Authority

Section [22.1-79.1](#) of the *Code of Virginia* governs the conditions under which the Board of Education may grant a waiver to a local school board to open school prior to Labor Day.

§ [22.1-79.1](#). Opening of the school year; approvals for certain alternative schedules.

A. Each local school board shall set the school calendar so that the first day students are required to attend school shall be after Labor Day. The Board of Education may waive this requirement based on a school board certifying that it meets one of the good cause requirements of subsection B.

B. For purposes of this section, "good cause" means:

1. A school division has been closed an average of eight days per year during any five of the last 10 years because of severe weather conditions, energy shortages, power failures, or other emergency situations;

2. A school division is providing, in the school year for which the waiver is sought, an instructional program or programs in one or more of its elementary or middle or high schools, excluding Virtual Virginia, which are dependent on and provided in one or more elementary or middle or high schools of another school division that qualifies for such waiver. However, any waiver granted by the Board of Education pursuant to this subdivision shall only apply to the opening date for those schools where such dependent programs are provided;

3. A school division is providing its students, in the school year for which the waiver is sought, with an experimental or innovative program which requires an earlier opening date than that established in subsection A of this section and which has been approved by the Department of Education pursuant to the regulations of the Board of Education establishing standards for accrediting public schools. However, any waiver or extension of the school year granted by the Board of Education pursuant to this subdivision or its standards for accrediting public schools for such an experimental or innovative program shall only apply to the opening date for those schools where such experimental or innovative programs are offered generally to the student body of the school. For the purposes of this subdivision, experimental or innovative programs shall include instructional programs that are offered on a year-round basis by the school division in one or more of its elementary or middle or high schools; or

4. A school division is entirely surrounded by a school division that has an opening date prior to Labor Day in the school year for which the waiver is sought. Such school division may open schools on the same opening date as the surrounding school division....

The Board of Education will consider the following guidelines in approving requests of local school boards to open one or more schools prior to Labor Day.

Waiver by Superintendent on Board's Behalf

The Board of Education delegates to the Superintendent of Public Instruction the authority to approve, on its behalf, a local school board's request for a waiver to open all schools in the division prior to Labor Day if the school division meets one of the following good cause requirements of subsection § 22.1-79.1 B.

- The school division has been closed an average of eight days per year during any five of the last 10 years because of severe weather conditions, energy shortages, power failures, or other emergency situations. (§ 22.1-79.1 B. 1)
- The school division is entirely surrounded by a school division that has an opening date prior to Labor Day in the school year for which the waiver is sought. Such school division may open schools on the same opening date as the surrounding school division. (§ 22.1-79.1 B. 4)

Waiver by Board of Education Action

The Board of Education will consider a local school board's request for a waiver to open one or more schools in its division prior to Labor Day if one of the following good cause requirements of subsection § 22.1-79.1.B. are met. The Board will not provide advisory opinions or hypothetical waivers. The local school board must certify that if granted a waiver, the division intends to provide the program in the school year for which the waiver is being sought.

- The school division is providing an instructional program or programs in the schools for which the waiver is requested, excluding *Virtual Virginia*, which are dependent on and provided in one or more schools of another school division that qualifies for a waiver to open prior to Labor Day. Any waiver granted by the Board of Education pursuant to this provision shall *only* apply to the opening date for those schools where such dependent programs are provided. (§ 22.1-79.1 B. 2)
- The school division is providing its students with an experimental or innovative program, which *requires* the school to open prior to Labor Day. Any waiver granted by the Board of Education pursuant to this provision shall *only* apply to the opening date for those schools where such experimental or innovative programs are offered generally to the student body of the school. (§ 22.1-79.1 B. 3)

Experimental and Innovative Program Considerations

- In accordance with § 22.1-79.1 of the Code of Virginia, experimental or innovative programs shall include instructional programs which are offered on a year-round basis by a school division in one or more of its elementary, middle, or high schools.
- An *experimental program* is defined, for purposes of a waiver, as a program which is operated under controlled circumstances and which is designed to test and to establish, by objective

measures, the positive cognitive effect of an educational theory. The experimental program must be offered generally to the student body of the school.

- An *innovative program* is defined, for purposes of a waiver, as an educational program that implements creative, original, or new ideas or methods and are likely to result in better outcomes for student participants. The innovative program must be offered generally to the student body of the school.
- Any experimental or innovative program must ensure parental and community involvement.

Application for Waiver

1. The initial request for a waiver to approve an experimental or innovative program, including a year-round school program, shall be submitted to the Board of Education for approval. Once the initial approval is granted by the Board of Education, the Superintendent of Public Instruction is hereby delegated authority to continue to approve the waiver in subsequent years, unless the Board places conditions or time limits on its approval, or unless the Superintendent determines that the conditions under which the approval was granted to the local school board are changed.
2. The local school board shall submit annually to the Superintendent of Public Instruction certification of eligibility for a waiver of the “good cause” requirements of § 22.1-79.1, *Code of Virginia*. Such certification shall be made in a manner prescribed by the Superintendent of Public Instruction. School divisions must maintain evidence that such “good cause” conditions have been met.
3. To request approval of a waiver for weather-related or other emergency conditions, the local school board shall submit information annually indicating that the school division has been closed for an average of eight days per year in any five of the past ten years because of severe weather conditions, energy shortages, power failures, or other emergency conditions.
4. To request initial approval of a waiver to open before Labor Day by a school division that is completely surrounded by another school division that has been approved for a waiver, the school division shall submit the request to the Superintendent of Public Instruction by letter signed by the superintendent and the chairman of the local school board. The Superintendent of Public Instruction shall determine that the school division is completely surrounded by another school division, and that the other school division has been granted a waiver to open before Labor Day. Once the initial waiver is granted, the local school board shall submit information annually to the Superintendent of Public Instruction indicating that the conditions under which a waiver was granted have not changed.
5. To request approval of a waiver for a dependent program, the local school board shall submit information annually indicating that each school for which a waiver is requested provides an instructional program, excluding Virtual Virginia, which is dependent upon a school in another division that qualifies for a waiver.
6. To request initial approval of a waiver for a pre-Labor Day opening for an experimental or innovative program, the local school division shall submit such request to the Board of Education on a form prescribed by the Superintendent of Public Instruction at least 180 calendar days prior to the expected implementation date. Such a request shall set forth a thorough

explanation of the experimental or innovative program as well as the specific reasons that would compel a pre-Labor Day opening. The Department is available throughout the application process to provide technical assistance to the applicant. The following procedures apply to the initial application for experimental or innovative programs:

- a. The experimental or innovative program must be approved by the Board pursuant to its *Regulations Establishing Standards for Accrediting Public Schools in Virginia* at 8 VAC 20-131-290. The request must include:
 - 1) The names of the participating schools and the school division requesting the waiver.
 - 2) The purpose and objectives of the experimental/innovative/year-round program:
Describe how the school meets the definition of experimental or innovative or year-round school and its goals and objectives. Include the title of the program or activity, a program description, the rationale for the program, the number and names of all schools involved, the names of any other organizations, including colleges, universities, and other postsecondary organizations and community organizations that are involved in the program, the grades served, the names of any other school divisions involved in the program, and other relevant information.
 - 3) An explanation of the necessity for opening prior to Labor Day, including the proposed school year calendar's opening and closing dates as well as a general description of the school calendar and duration of the waiver. This explanation must show that this request meets the "good cause" requirements of §22.1-79.1. B.3, *Code of Virginia*.
 - 4) Anticipated outcomes, including an explanation as to why it is believed the program will be a success.
 - 5) Number of students affected, including demographic information describing the students who will be attending and the community the school serves.
 - 6) Evaluation procedures including mechanisms for measuring goals and objectives, and analysis of data, to determine how this program will support an expected increase in proficiency in student academic achievement and any achievement gap.
 - 7) Other anticipated outcomes.
 - 8) Any other information that will support the request for a Pre-Labor Day waiver.

Each pre-Labor Day waiver request must be approved by the local school board and signed and dated by the chairman of the school board and the school superintendent and forwarded to Superintendent of Public Instruction.

- b. Any waiver or extension of the school year granted by the Board pursuant to the experimental or innovative program provisions contained in § 22.1-79.1 of the *Code of Virginia*, or the Board's *Regulations Establishing Standards for Accrediting Public Schools in Virginia* shall apply only to the opening date for those schools where such experimental or innovative programs are offered generally to the student body of the school.
- c. To request approval of a waiver for a pre-Labor Day opening for an experimental or innovative program subsequent to the Board of Education's initial approval, unless the Board of Education has specified conditions under which the waiver request must go back to the Board for approval, or the Superintendent determines that the conditions under which the initial approval was granted to the local school board have changed, the local school board shall submit information annually to the Superintendent of Public Instruction as part of the pre-Labor Day waiver self-certification process for public schools with pre-Labor Day

waivers. The submission shall include evidence of the results achieved throughout the experimental or innovative program in prior years.

Reports to the Board of Education

- The Board of Education may request that the Superintendent of Public Instruction provide a report to the Board regarding the status of certifications submitted and waivers granted under the above-stated policies. Such report shall be provided in a manner and at a time as agreed to by the Superintendent and the President of the Board and shall include information deemed pertinent by the Superintendent of Public Instruction.
- Any information required to be submitted to the Superintendent of Public Instruction for a pre-Labor Day waiver shall be submitted to the:

Office of Policy
Virginia Department of Education
P.O. Box 2120
Richmond, VA 23218-2120
Policy@doe.virginia.gov
804-225-2092

COMMONWEALTH OF VIRGINIA
BOARD OF EDUCATION
P.O. Box 2120
RICHMOND, VIRGINIA 23218-2120

REQUEST FOR WAIVER OF CERTAIN ACCREDITING STANDARDS
AND/OR APPROVAL
OF AN INNOVATIVE OR EXPERIMENTAL PROGRAM

The *Regulations Establishing Standards for Accrediting Public Schools in Virginia*, (8 VAC 20-131-10 et seq.) sets the minimum standards public schools must meet to be accredited by the Board of Education. Accreditation of public schools is required by the Standards of Quality (§§ 22.1-253.13:1 et seq.). The annual accrediting cycle for public schools is July 1 through June 30.

This cover sheet, with the supporting documentation, must be submitted to the Department of Education for review and recommendation to the Board at least 90 days prior to the beginning of an accrediting cycle or the proposed implementation of the program or activity that precipitates the request for the waiver. The types of waivers available and the corresponding section of the standards are indicated below. Please attach additional sheets or information deemed appropriate. (The Board will consider this request in its monthly meeting and school divisions **are required** to appear before the board **in person or electronically** to explain a waiver request.)

SCHOOL DIVISION Danville City Schools

TITLE OF PROGRAM/ACTIVITY Academy of Engineering and Technology

TYPE OF APPROVAL REQUESTED:

- Approval of an Alternative to the Standard School Year and School Day (8 VAC 20-131-150)
- Approval of an Alternative Accreditation Plan (8 VAC 20-131-280.D)
- Approval of an Experimental Program (§ 22.1-79.1 of the *Code of Virginia* and 8 VAC 20-131-290.D)
- Approval of an Innovative Program (§ 22.1-79.1 of the *Code of Virginia* and 8 VAC 20-131-290.D)
- Approval of a Waiver of Other Provision(s) of the Standards (8 VAC 20-131-350)
(Complete Pages 1 and 3 of the application only.)

SCHOOL OR SCHOOLS INVOLVED IN THE PROPOSED PROGRAM/ACTIVITY

Langston Focus School, Galileo High School,
George Washington High School

Feb. 21, 2014

Date Approved
by the Local School Board

Edward C. Polhauer, Jr.

Signature
Chairman of the School Board

February 21, 2014
Submission Date

Edward D. Newsome, Jr.
Signature
Division Superintendent

SCHOOL DIVISION

Danville City Schools

TITLE OF PROGRAM/ACTIVITY

Academy of Engineering and Technology/Summer Enrichment for Elementary and Middle

IF THE PROPOSED PROGRAM IS EXPERIMENTAL OR INNOVATIVE, FOR EACH SCHOOL EXPLAIN HOW THIS IS SO AND PROVIDE A PROGRAM DESCRIPTION, INCLUDING THE TYPE OF PROGRAM, ITS PURPOSE, THE GRADES SERVED, DEMOGRAPHIC INFORMATION DESCRIBING THE STUDENTS WHO WILL BE ATTENDING, THE RATIONALE FOR THE PROGRAM, THE PROGRAM'S GOALS, EVALUATION PROCEDURES, AND OTHER RELEVANT INFORMATION.

Through a partnership with Virginia State University (VSU), the New College Institute (NCI) is proud to offer the Academy for Engineering and Technology (AET) to students from Martinsville, Henry County, Carlisle, Pittsylvania County and Danville school systems. The AET program is currently housed in NCI's uptown Martinsville campus and the Institute for Advanced Learning and Research (IALR) located in Danville including additional partnership with Danville Community College (DCC).

Rising juniors enrolled within the AET program will have the opportunity to choose between two tracks of study: *engineering* or *technology*. Credits earned within either track are aligned such that they may transfer to ABET accredited universities upon successful completion of the program (see transferability).

Engineering: Students are exposed to basic design analysis and engineering graphics. Engineers are team leaders that plan, design and supervise engineering projects from concept to completion. Engineers solve problems by relying on their creative and academic skills. The successful student should enjoy problem solving and is challenged by the effort it requires. Students are required to complete Calculus by the time they graduate from high school.

Technology: Students will be introduced to tools and techniques involving manufacturing logistics, SAP (Systems, Applications and Products), engineering graphics, and many other topics that will allow students to earn certificates and experiences that are highly sought after by employers. Engaging in technology supports working as part of a team focused on completing an operation or task. Technology majors prepare for practical design and applied use of tools and techniques to manage projects and solve problems. Students are required to complete Trigonometry by the time they graduate from high school.

The two year engineering curriculum is comprised of courses that will focus on theory and design. Design in engineering provides the creation of new facilities, machinery, goods, materials, and life needs. Students enrolled in the engineering track will take advantage of many projects, lectures, and assignments that focus on design, construction, and project management. Some examples of engineering design are jet aircrafts and personal vehicles. Engineers are team leaders that plan, design and supervise engineering projects from concept to completion. Engineers solve problems by relying on their creative and academic skills. You should enjoy problem solving and be challenged by the effort it requires. Additionally, students will actively engage in lab experiments and projects and work with faculty and industry to promote their ability to innovate and design components and processes (Da Vinci Innovators).

Students are also enrolled in both English and math courses which enhance the ability to write technically, present, and communicate effectively within the workplace. The math courses are required to complete and advanced through the program.

Students from Danville Public Schools that will attend the Academy of Engineering and Technology will participate from the rural area of Southern Virginia.

In addition, Danville Public Schools will enhance the curriculum experiences to students by participation in the following areas below.

- Dual Enrollment opportunities for students with local colleges and universities
- Career Exploration and collaboration and program between middle and high schools
- Instructional collaboration and internship partnership with Danville Community College
- Student Internships with Danville Regional Medical Center
- Alignment with school year calendars in Pittsylvania County, Henry County, and Martinsville City Public School Division

- Participation in the NASA program in Martinsville City Schools

The Pre-K, Elementary, Middle and High School will provide summer enrichment camps and summer school during the 2014-2015 academic year. The students will be involved in Pre-K readiness camps that will focus on the development of early literacy for students entering kindergarten. The Elementary, Middle and High School summer school will focus on students that need support with additional enrichment in literacy and math to support our students' development for the next grade level. We will also offer coursework to support credit recovery opportunities, SOL testing needs as well as preparation for the graduation requirements. The High School will also have a ninth grade transition academy for the rising freshmen of each of Danville Public Schools' High Schools. The two week session for rising freshmen will support each of them with an academic focus to prepare them for the graduation requirements over the next four years. The outcome of each of the summer enrichment opportunities for the students will benefit our students to increase literacy and place a focus on transitioning smoothly to High School. Students attending the summer enrichment opportunities will begin classes in June and will end in July. The assessment of the summer enrichment will be provided by pre and post data. Our students will benefit from the additional academic support as well as the opportunity to prevent the summer reading loss.

DOES THE PROGRAM REQUIRE THE SCHOOL OR SCHOOLS REFERENCED IN THIS APPLICATION TO OPEN PRIOR TO LABOR DAY?

YES NO.

IF YES, EXPLAIN WHY.

The schools will benefit from a pre-Labor Day opening to gain a full opportunity of the month of August to begin their coursework early. The students will also benefit at the end of the school year to become gainfully employed as an intern with the partnering industries. This will allow Danville Public Schools students to have an early opportunity for placement as an intern for the summer. The summer enrichment program for students in grades Pre-K -12 will end in July and the students will return to school within three weeks. The extensive enrichment summer calendar will allow for all students to continue the academic intensity for the year.

IF THE PROGRAM IS EXPERIMENTAL, FOR THE SCHOOL OR SCHOOLS REFERENCED IN THIS APPLICATION INCLUDE INFORMATION THAT EXPLAINS WHY THERE IS REASON TO EXPECT THAT THE PROGRAM WILL BE SUCCESSFUL.

Experiential Learning: Along with the academic courses offered with both tracks, students will participate in many experiential learning activities throughout the curriculum to apply their academic knowledge to on-the-job situations. These include interactions (guest lectures) with individuals in career fields of engineering, technology and advanced manufacturing; exposures to high tech industry through onsite tours; and the opportunity for paid, hands-on internships with industry leaders of Southern Virginia and throughout the Commonwealth of Virginia.

Students may apply for an opportunity to participate within the paid NCI Experiential Learning in Technology and Engineering (ELITE) Internship (\$1500) and/or Industry Fundamentals (\$500). Interns will be selected based on the criteria provided within the application and the ability to successfully complete a hiring process per the participating employer which may include the following: a background check, aptitude test and drug screening. This is a competitive process and there are no guarantees that all enrolled AET students will have a paid internship. If the selected intern cannot pass the employer's hiring protocol, the intern may be liable for dismissal from the ELITE Internship.

DESCRIBE THE ANTICIPATED OUTCOMES OF THE PROGRAM FOR EACH SCHOOL.

AET Benefits:

- The opportunity to earn college credits in engineering and technology.
- Credits may transfer to other ABET accredited universities saving up to \$8,000.
- Gain valuable knowledge and experience in careers for which employers are hiring.
- Opportunities for a paid internship within the fields of engineering and technology.
- Earn up to \$2000: ELITE (Experiential Learning in Technology & Engineering) internships (\$1500) and/or Industry Fundamentals (\$500)
- Explore various engineering and technology career paths
- Experience state-of-the art engineering and technology within advanced manufacturing

- **Connect with a world-class industry for potential long-term employment**
- **Gain marketable work skills for college and/or employment upon high school graduation**

Summer Enrichment:

- **Literacy and Math Enrichment**
- **Credit Recovery**
- **Graduation Requirements**
- **Early Learning Opportunity**
- **Ninth Grade Transition Preparation**

SCHOOL DIVISION Danville City Schools

TITLE OF PROGRAM/ACTIVITY Academy of Engineering and Technology/Summer Enrichment for Elementary and Middle

IF YOU ARE SEEKING A WAIVER OF A PROVISION OR PROVISIONS OF THE ACCREDITING STANDARDS, STATE THE PROVISION AND THE RATIONALE FOR SEEKING A WAIVER FOR EACH.

DESCRIBE THE PROCEDURES THAT WILL BE USED TO EVALUATE THE EFFECTIVENESS OF THE WAIVER/PROGRAM/ACTIVITY. (Include information that includes measurable goals, objectives, and student academic achievement that will be expected as a result of the implementation of the program/activity.)

Number of students involved in the program 6348

What is the anticipated length of the program or duration of the waiver? Entire 2014-2015 School Year

Questions should be directed to the Division of Policy and Communications at (804) 225-2092, or by e-mail to policydata@doe.virginia.gov. This application and supporting documentation must be sent to:

Division of Policy and Communications
Department of Education
P. O. Box 2120
Richmond, VA 23218-2120

Application for Entry



Academy for Engineering & Technology
New College Institute & Virginia State University

Through a partnership with Virginia State University (VSU), the New College Institute (NCI) is proud to offer the Academy for Engineering and Technology (AET) to students from Martinsville, Henry County, Carlisle, Pittsylvania County and Danville school systems. The AET program is currently housed in NCI's uptown Martinsville campus and the Institute for Advanced Learning and Research (IALR) located in Danville including additional partnership with Danville Community College (DCC).

AET Benefits:

- The opportunity to earn college credits in engineering and technology.
- Credits may transfer to other ABET accredited universities saving up to \$8,000.
- Gain valuable knowledge and experience in careers for which employers are hiring.
- Opportunities for a paid internship within the fields of engineering and technology.



AET Overview

Rising juniors enrolled within the AET program will have the opportunity to choose between two tracks of study: *engineering* or *technology*. Credits earned within either track are aligned such that they may transfer to ABET accredited universities upon successful completion of the program (see transferability).

Engineering: Students are exposed to basic design analysis and engineering graphics. Engineers are team leaders that plan, design and supervise engineering projects from concept to completion. Engineers solve problems by relying on their creative and academic skills. The successful student should enjoy problem solving and is challenged by the effort it requires. Students are required to complete Calculus by the time they graduate from high school.

Technology: Students will be introduced to tools and techniques involving manufacturing logistics, SAP (Systems, Applications and Products), engineering graphics, and many other topics that will allow students to earn certificates and experiences that are highly sought after by employers. Engaging in technology supports working as part of a team focused on completing an operation or task. Technology majors prepare for practical design and applied use of tools and techniques to manage projects and solve problems. Students are required to complete Trigonometry by the time they graduate from high school.

➤ *The technology track is not currently offered at IALR for the 2014-2015 school year*

Experiential Learning: Along with the academic courses offered with both tracks, students will participate in many experiential learning activities throughout the curriculum to apply their academic knowledge to on-the-job situations. These include interactions (guest lectures) with individuals in career fields of engineering, technology and advanced manufacturing; exposures to high tech industry through onsite tours; and the opportunity for paid, hands-on internships with industry leaders of Southern Virginia and throughout the Commonwealth of Virginia.

Students may apply for an opportunity to participate within the paid NCI Experiential Learning in Technology and Engineering (ELITE) Internship (\$1500) and/or Industry Fundamentals (\$500). Interns will be selected based on the criteria provided within the application and the ability to successfully complete a hiring process per the participating employer which may include the following: a background check, aptitude test and drug screening. This is a competitive process and there are no guarantees that all enrolled AET students will have a paid internship. If the selected intern cannot pass the employer's hiring protocol, the intern may be liable for dismissal from the ELITE Internship.

Core Requirements: Students within the AET program are expected to conduct themselves in a respectable and mature manner and pride themselves in the following ways:

- A. Ability/Interest in hands-on application of classroom learning
- B. Demonstrates:
 - Excellent attendance and conduct
 - Enthusiasm in learning at the university level
 - Excellent analytical and communication skills
 - A focus on note-taking
 - Ability to be a self-starter
 - Works well both individually and in group settings
- C. Passion/aptitude for math, problem solving, and technology usage
- D. Self-accountable for college level behavior

Application Checklist: To be considered for enrollment within AET, the following must be completed.

- Applicant Information
- Satisfactory scores for math and English on the VPT/PSAT/SAT/ACT or equivalent test(s).
- Three faculty recommendations (one math, one science, and an additional faculty member)
- Two completed essays
- Deadline for completed applications is **May 1st, 2014.**

Representatives from the school division will select the top applicants.

Promotional Release Disclaimer: Please be aware that your photo may be taken throughout the year during classroom and experiential learning activities. By completing this application, you and your parent/guardian allow and acknowledge that your photo may be published in press releases and/or promotional materials.

Applicant Information

Full Name: _____
Last First M.I.

Address: _____
Street Apartment/Unit#

City State Zip Code

Home Phone: (_____) _____ Cell Phone: (_____) _____

Is it okay to send information through text messaging? _____

Email: _____

High School Attending: _____

Guidance Counselor: _____

Demographics

This information is voluntary and will not be used when considering you for program enrollment.

Racial or Ethnic Group

- | | | |
|--|---|---|
| <input type="checkbox"/> American Indian/Alaskan | <input type="checkbox"/> Asian/Pacific Islander | <input type="checkbox"/> Black/African American |
| <input type="checkbox"/> Hispanic/Latino | <input type="checkbox"/> White/Caucasian | <input type="checkbox"/> Other |

Gender Female Male

Upon graduation from high school, do you plan to...

- | | |
|---|---|
| <input type="checkbox"/> Enroll in a degree program at a college or university? | <input type="checkbox"/> Begin working immediately? |
| <input type="checkbox"/> Enlist into the military? | <input type="checkbox"/> Undecided? |

If planning on enrolling into a college or university, do you plan on seeking a degree in engineering or technology?

- Yes No Undecided Other _____

Academics

By having the prospective student and their parent/guardian sign below, you allow your high school transcripts to date and your scores on the VPT or equivalent tests to be evaluated for your academic performance and college readiness.

Student Signature: _____ Date: _____

Parent/Guardian Signature: _____ Date: _____

Curriculum Choice

Please select only one below

Credits earned within either track are aligned such that they may transfer to ABET accredited universities upon successful completion of the program.

Engineering: Students are exposed to basic design analysis and engineering graphics. Engineers are team leaders that plan, design and supervise engineering projects from concept to completion. Engineers solve problems by relying on their creative and academic skills. You should enjoy problem solving and be challenged by the effort it requires. Students are required to complete Calculus by the time they graduate from high school.

Technology : Students will be introduced to tools and techniques involving manufacturing logistics, SAP (Systems, Applications and Products), engineering graphics, and many other topics that will allow students to earn certificates and experiences that are highly sought after by employers. Engaging in technology supports working as part of a team focused on completing an operation or task. Technology majors prepare for practical design and applied use of tools and techniques to manage projects and solve problems. Students are required to complete Trigonometry by the time they graduate from high school.

➤ *The technology track is not currently offered at IALR for the 2014-2015 school year*

Extracurricular Activities

Grade Level(s) letters earned, etc.	Activity	Position Held, Honors won, letters earned, etc.
--	----------	--

Additional academic information you'd like to include:

Faculty Recommendations

Prospective AET students are required to attain faculty recommendations from a math teacher, a science teacher, and an additional faculty member. Preferably from the most recent course you have completed to date. Be sure to allow at least one week for the faculty member to complete the recommendation if not more.

Please list the names and email addresses of the faculty members you are requesting to write a recommendation. An email with an overview of the AET program and a link to complete the recommendation will be provided to them.

Math Faculty Member Name: _____

Math Faculty Member Email: _____

Science Faculty Member Name: _____

Science Faculty Member Email: _____

Additional Faculty Member Name: _____

Additional Faculty Member Email: _____

Email to Faculty Member:

Hello,

You have been requested to complete a recommendation for [student name] 's application into the [engineering/technology] curriculum of the Academy for Engineering and Technology (AET). As a current or former teacher, you have the unique ability to give the selection committee additional insight into the student's capabilities outside of what can be found during a review of their transcripts. With this in mind, an overview of the AET program is provided below. At the end of the overview, you will find a link to a secure website to complete the recommendation. If you have any questions regarding the AET program or recommendation form, please feel free to contact any of the following:

Dr. Coray Davis
AET Program Director
(276)403-5647
cgdavis@vsu.edu

Mr. John Hatchett
AET Assistant Program Director
(276)403-5622
jhatchett@newcollegeinstitute.org

[Name]
[IALR AET Faculty]
[Phone]
[Email]

AET Overview

Through a partnership with Virginia State University (VSU), the New College Institute (NCI) created the Academy for Engineering and Technology starting with the 2012-2013 school year. Students enrolled within the AET program will have the opportunity to choose between two tracks of study: *engineering* or *technology*. Credits earned within either track are aligned such that they may transfer to ABET accredited universities upon successful completion of the program.

Engineering: Students are exposed to basic design analysis and engineering graphics. Engineers are team leaders that plan, design and supervise engineering projects from concept to completion. Engineers solve problems by relying on their creative and academic skills. The successful student should enjoy problem solving and challenged by the effort it requires. Students are required to complete Calculus by the time they graduate from high school.

Technology: Students will be introduced to tools and techniques involving manufacturing logistics, SAP (Systems, Applications and Products), engineering graphics, and many other topics that will allow students to earn certificates and experiences that are highly sought after by employers. Engaging in technology supports working as part of a team focused on completing an operation or task. Technology majors prepare for practical design and applied use of tools and techniques to manage projects and solve problems. Students are required to complete Trigonometry by the time they graduate from high school.

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Core Requirements: Students within the Academy for Engineering and Technology are expected to conduct themselves in a respectable and mature manner. The successful student within the AET program will pride themselves in the following ways:

- A. Ability/Interest in hands-on application of classroom learning
- B. Demonstrates:
 - Excellent attendance and conduct
 - Enthusiasm in learning at the university level
 - Focus on note-taking
 - Works well both individually and in group settings
 - Excellent analytical and communication skills
 - Ability to be a self-starter
- C. Passion/aptitude for math, problem solving, and technology usage
- D. Self-accountable for college level behavior

[[link to faculty recommendation form](#)]

Please submit your recommendation no later than **April 24, 2014**.

Faculty Recommendation Form:

Please rate [student's name] 's capabilities for success in the [engineering/technology] curriculum of the AET program in the following categories by indicating the appropriate number based on the following scale:

1 = not observed 2 = needs improvement 3 = average 4 = above average 5 = excellent

Section 1: The student ...		1	2	3	4	5
1. shows desire and curiosity for learning						
2. has aptitude and potential for study in math, science, technology, and communications						
3. shows persistence when faced with challenges						
4. is self-disciplined in establishing and reaching goals						
5. is a self-starter when it comes to note-taking and assignments						
6. interacts well with other students and teachers						
7. has developed problem-solving skills/critical thinking skills						
8. demonstrates skill in asking inquiry-type questions						
9. demonstrates outstanding study skills and work habits						
10. produces exceptional written work						
11. possesses excellent time management skills						
12. demonstrates effective teamwork skills						
13. shows strong dedication						
14. has an exceptional work ethic						
Section 1 Subtotal:						
Section 2: As the teacher, I ...		Do not recommend	Recommend with reservations	Recommend	Highly Recommend	
		0	1	3	5	
Total Score						

Additional comments you would like to provide:

Faculty Name: _____

Subject Area: _____

Faculty Signature: _____

Date: _____

Essay #1 – Interest in Engineering and Technology

Tell us about an engineering/technology idea you have, or about your interest in engineering/technology. Describe how your ideas and interests may be realized by your enrollment within the Academy for Engineering and Technology. Please limit your response to approximately 300 words.

Essay #2 – Individual Interests and Experiences

Tell us about one interest or experience of yours that allows us to get to know you better as an individual. Please limit your response to approximately 300 words.

Applicant's SS #/ID # _____

School _____

THE ACADEMY FOR ENGINEERING AND TECHNOLOGY

STUDENT SELECTION MATRIX

ITEM	POINTS	WEIGHT	SCORE															
PSAT: Critical Reading Math	<table border="0"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>42-48</td><td>49-53</td><td>54-60</td><td>61-68</td><td>69-80</td> </tr> <tr> <td>44-49</td><td>50-55</td><td>56-61</td><td>62-69</td><td>70-80</td> </tr> </table>	1	2	3	4	5	42-48	49-53	54-60	61-68	69-80	44-49	50-55	56-61	62-69	70-80	Total X 1 (10 max)	
1	2	3	4	5														
42-48	49-53	54-60	61-68	69-80														
44-49	50-55	56-61	62-69	70-80														
ESSAYS Content and Style	<table border="0"> <tr> <td>Essay # 1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>Essay # 2</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> </table>	Essay # 1	1	2	3	4	5	Essay # 2	1	2	3	4	5	Total X 1 (10 max)				
Essay # 1	1	2	3	4	5													
Essay # 2	1	2	3	4	5													
ACHIEVEMENT: Test: VPT English Math	<table border="0"> <tr> <td>Fail</td><td></td><td>Pass</td> </tr> <tr> <td>0</td><td></td><td>5</td> </tr> <tr> <td>0</td><td></td><td>5</td> </tr> </table>	Fail		Pass	0		5	0		5	Total X 1 (10 max)							
Fail		Pass																
0		5																
0		5																
GPA (unweighted) 4 point scale	<table border="0"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>2.75</td><td>3.01</td><td>3.26</td><td>3.51</td><td>3.76</td> </tr> </table>	1	2	3	4	5	2.75	3.01	3.26	3.51	3.76	X 3 (15 max)						
1	2	3	4	5														
2.75	3.01	3.26	3.51	3.76														
MATH FACULTY	<table border="0"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>40-44</td><td>45-49</td><td>50-54</td><td>55-59</td><td>60-65</td> </tr> </table>	1	2	3	4	5	40-44	45-49	50-54	55-59	60-65	X 2 (10 max)						
1	2	3	4	5														
40-44	45-49	50-54	55-59	60-65														
SCIENCE FACULTY	<table border="0"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>40-44</td><td>45-49</td><td>50-54</td><td>55-59</td><td>60-65</td> </tr> </table>	1	2	3	4	5	40-44	45-49	50-54	55-59	60-65	X 2 (10 max)						
1	2	3	4	5														
40-44	45-49	50-54	55-59	60-65														
ADDITIONAL FACULTY	<table border="0"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td> </tr> <tr> <td>40-44</td><td>45-49</td><td>50-54</td><td>55-59</td><td>60-65</td> </tr> </table>	1	2	3	4	5	40-44	45-49	50-54	55-59	60-65	X 2 (10 max)						
1	2	3	4	5														
40-44	45-49	50-54	55-59	60-65														

TOTAL SCORE _____

Curriculum and Plan of Study
Pittsylvania County Schools & Danville Public Schools

2014 – 2015



Academy for Engineering & Technology
New College Institute & Virginia State University



New College Institute in Martinsville, Virginia, provides bachelor's and master's degrees, certificates and endorsements, and other workforce development programs through partner universities. Industry-driven, NCI has a specific focus on its growing advanced manufacturing program. Through a partnership with Virginia State University, high school students receive college credit for taking courses in NCI's Academy for Engineering and Technology (AET). This program is now being extended and offered to students in Pittsylvania County and Danville City Schools at the Institute for Advanced Learning and Research (IALR) in Danville, VA. Additionally, students are also enrolled in both English and math courses through a partnership with Danville Community College (DCC).

Students enrolled in AET will focus on the design of software and processes, have completed, will be concurrently enrolled in, or must complete during senior year, calculus-level math, and may go on to complete a bachelor's degree in engineering or technology upon completion of the program. All students will receive certificates detailing the program they completed and the skills they developed and an opportunity to complete an internship as well as attend numerous on-site industry visits. The program is housed at the Institute for Advanced Learning and Research (IALR) in Danville, Virginia.

FACULTY

The faculty is strong, well-qualified, and very active in scholarly work and in service to the profession. The faculty members have extensive interactions with students, industry, and professional organizations. Dr. Coray Davis has leadership responsibility for the AET program. He serves as both AET faculty and director of the program and works closely with schools, organizations, and companies for continuous improvement of the program. John Hatchett serves as the assistant program director and will support the AET through teaching, development, and continuous improvement as well as, interfacing with other academic programs at k-12 and higher education level. An additional AET faculty member will serve as an instructor at the IALR and work closely with the program director and assistant program director to maintain consistency between the NCI and IALR sites. The AET faculty will work together to coordinate and setup laboratories and instructional assignments using equipment such as five axis machines, 3-D printers, CNC routers, Instron testing equipment, 3-D modeling and simulation, and ERP software through NCI and IALR.

AET CURRICULUM

The two year engineering curriculum is comprised of courses that will focus on theory and design. Design in engineering provides the creation of new facilities, machinery, goods, materials, and life needs. Students enrolled in the engineering track will take advantage of many projects, lectures, and assignments that focus on design, construction, and project management. Some examples of engineering design are jet aircrafts and personal vehicles. Engineers are team leaders that plan, design and supervise engineering projects from concept to completion. Engineers solve problems by relying on their creative and academic skills. You should enjoy problem solving and be challenged by the effort it requires. Additionally, students will actively engage in lab experiments and projects and work with faculty and industry to promote their ability to innovate and design components and processes (Da Vinci Innovators).

Students are also enrolled in both English and math courses which enhance the ability to write technically, present, and communicate effectively within the workplace. The math courses are required to complete and advanced through the program.

COURSE SEQUENCE

Fall: Junior year

Time	Course Name	Univ.	Credits	Prerequisite
1 st block (8 – 9:30 am)	1 st 9-weeks: ENGR 101 - Intro. to Engineering I	VSU	2	None
	2 nd 9-weeks: ENGR 200 - Engineering Graphics	VSU	2	None
2 nd block * (9:30 – 11 am)	A: ENG 111 – College Composition I ENG 112 – College Composition II	DCC	3 3	VPT
	B: MTH 166 – Precalculus with Trigonometry	DCC	5	VPT

Spring: Junior year

Time	Course Name	Univ.	Credits	Prerequisite
1 st block (8 – 9:30 am)	ENGR 102 – Intro. To Engineering II	VSU	2	ENGR 101
2 nd block * (9:30 – 11 am)	A: ENG 111 – College Composition I ENG 112 – College Composition II	DCC	3 3	VPT
	B: MTH 166 – Precalculus with Trigonometry	DCC	5	VPT

Fall: Senior year

Time	Course Name	Univ.	Credits	Prerequisite
1 st block (8 – 9:30 am)	ENGR 210 – Statics & Strength of Materials with Da Vinci Innovators	VSU	3	ENGR 102
2 nd block * (9:30 – 11 am)	A: ENG 243 – Survey of English Literature I ENG 244 – Survey of English Literature II	DCC	3 3	ENG 112
	B: MTH 273 – Calculus I	DCC	4	MTH 166

Spring: Senior year

Time	Course Name	Univ.	Credits	Prerequisite
1 st block (8 – 9:30 am)	ENGR 201 – Circuit Analysis with Da Vinci Innovators	VSU	3	ENGR 102
2 nd block * (9:30 – 11 am)	A: ENG 243 – Survey of English Literature I ENG 244 – Survey of English Literature II	DCC	3 3	ENG 112
	B: MTH 273 – Calculus I	DCC	4	MTH 166

* 2nd block classes will operate on an A/B schedule throughout the year
(i.e.: Monday – English, Tuesday – Math, Wednesday – English,)

COURSE DESCRIPTIONS

ENGR 101 (VSU)

INTRODUCTION TO ENGINEERING I - 2 semester hours

F

Introduction to the engineering profession (logic), with problem solving using analytical, graphical, and computer tools including scientific word processors, spreadsheets and database packages, mathematical computation software. Engineering ethics and professional responsibilities. This course offers a study of the physical and mechanical properties of various materials as applied to design, processing, and fabrication methods. Students will be provided content entailing lean manufacturing principles, ergonomics, supply chain sustainability, and traditional and current manufacturing processes.

Co-requisite: MTH 166

ENGR 102 (VSU)

INTRODUCTION TO ENGINEERING II - 2 semester hours

Sp

Provides and Introduction to problem solving using analytical, graphical, and computer tools including scientific word processors, spreadsheets and database packages, mathematical computation software. Introduction to engineering analyses. Engineering ethics and professional responsibilities. This course includes lab sessions.

Prerequisite: ENGR 101, Co-requisite: MTH 166

ENGR 200 (VSU)

ENGINEERING GRAPHICS (Lab included) - 2 semester hours

F

This course offers the introduction communicating technical information in engineering design and research through computer-aided design drafting and solid modeling with emphasis on finite element analysis.

Prerequisite: None

ENGR 201 (VSU)

CIRCUIT ANALYSIS - 3 semester hours

Sp

This course covers the fundamentals laws of circuit analysis which include: Ohm's Law, Kirchhoff's current and voltage laws, the law of conservation of energy, circuits containing independent and dependent voltage and current sources, resistance, conductance, capacitance and inductance analyzed using mesh and nodal analysis, superposition and source transformations, and Norton's and Thevenin's Theorems. Steady state analysis of DC and AC circuits is also discussed with a complete solution for transient analysis for circuits with one and two storage elements.

Prerequisite: ENGR 102, Co-requisite: MTH 273

ENGR 210 (VSU)

STATICS/STRENGTH OF MATERIALS - 3 semester hours

F

The first part of this course covers the application of the principles of engineering mechanics to problems involving equilibrium of particles and solids. Topics include resultants, equilibrium, friction, trusses, center of gravity and moments of inertia. The second part of this course introduces the principles of mechanics necessary for the solution of engineering problems relating to strength, stiffness and material selection. Topics covered include stress, strain, torsion, beams, columns and combined stresses at a point.

Prerequisite: ENGR 102, Co-requisite: MTH 273

ENG 111 (DCC)**COLLEGE COMPOSITION I – 3 semester hours****F/Sp**

Introduces students to critical thinking and the fundamentals of academic writing. Through the writing process, students refine topics: develop and support ideas; investigate, evaluate, and incorporate appropriate resources; edit for effective style and usage; and determine appropriate approaches for a variety of context, audiences, and purposes. Writing activities will include exposition and argumentation with at least one researched essay.

Prerequisite: VPT recommendation**ENG 112 (DCC)****COLLEGE COMPOSITION II – 3 semester hours****F/Sp**

Continues to develop college writing with increased emphasis on critical essays, argumentation, and research, developing these competencies through the examination of a range of texts about the human experience. Requires students to locate, evaluate, integrate, and document sources and effectively edit for style and usage.

Prerequisite: ENG 111**MTH 166 (DCC)****PRECALCULUS WITH TRIGONOMETRY – 5 semester hours****F/Sp**

Presents college algebra, analytic geometry, trigonometry, and algebraic exponential and logarithmic functions.

Prerequisite: VPT recommendation**ENG 243, ENG 244 (DCC)****SURVEY OF ENGLISH LITERATURE I & II – 3 semester hours each****F/Sp**

Studies major English works from the Anglo-Saxon period to the present, emphasizing ideas and characteristics of the British literary tradition. Involves critical reading and writing.

Prerequisite: ENG 112**MTH 273 (DCC)****CALCULUS I – 4 semester hours****F/Sp**

Presents topics in differential calculus of one variable including the theory of limits, derivatives, differentials, definite and indefinite integrals and applications to algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs.

Prerequisite: MTH 166**AET PROJ– non-credit****DA VINCI INNOVATORS****F/Sp**

Provide students with a project/innovative experience in the application of design and simulated projects based on real-world issues. Among the projects/tools that are implemented include: race car, design-build, and Da Vinci innovators project. This course is embedded into the engineering courses found in the curriculum.

Prerequisite: None

EXPERIENTIAL LEARNING

Students enrolled within the AET program will participate in many experiential learning activities throughout the curriculum to apply their academic knowledge to on-the-job situations. These include interactions (guest lectures) with individuals in career fields of engineering, technology and advanced manufacturing; exposures to high tech industry through onsite tours; and the opportunity for paid, hands-on internships with industry leaders of Southern Virginia and the Commonwealth of Virginia.

Students may apply for an opportunity to participate within the paid NCI Experiential Learning in Technology and Engineering (ELITE) Internship (\$1,500) and/or Industry Fundamentals (\$500). Interns will be selected based on the criteria provided within the application and the ability to successfully complete a hiring process per the participating employer which may include the following: a background check, aptitude test, and drug screening. This is a competitive process and there are no guarantees that all enrolled AET students will have a paid internship. If the selected intern cannot pass the employer's hiring protocol, the intern may be liable for dismissal from the ELITE Internship.

PROGRAM WITHDRAWAL/ACADEMIC PROBATION

Students that are removed or withdrawn from the program will be placed in appropriate courses at their home school. The withdrawal period falls within the first 15 days (15 Day Rule) of the course/program. Each school system will be contacted approximately 10 days in advance of any removal or withdrawal requests. A request is sent to the appropriate school division representative. The Pittsylvania County School System representative is Ms. Wanda Vaughan, Assistant Superintendent for Instruction (434-432-2761). The Danville City Schools representative is Ms. Yvette Smith, Assistant Superintendent for Curriculum and Instruction (434-799-6400).

If a student does not maintain a grade of C or higher in the VSU courses, they will be placed on academic probation for a given period of time in order to improve upon their performance. After such time, the student will either be restored to full academic standing or removed from the program upon consultation with AET program director and school representatives from above.

PROSPECTIVE STUDENT CHECKLIST

- Apply for admissions with Danville Community College during your sophomore year
<http://www.dcc.vccs.edu/Studentservices/Admissions/admissions.htm>
- Take the math and English VPT in February 2014 and/or an equivalent test (PSAT, SAT, ACT, etc) that can be used to verify eligibility for college level readiness
- Apply for AET – School division representatives will select the top applicants
 - Complete applicant information
 - Two written essays
 - Three faculty recommendations (one math, one science, and an additional faculty member)
 - Application deadline is **May 1, 2014**

Area	Objective	Course(s)	EQUIPMENT/SOFTWARE	Student Outcome
Computer Aided Drafting and Design/Computer Aided Manufacturing	An appropriate mastery of the knowledge, techniques, skills and modern tools in the areas (and principles) of materials, applied mechanics, strength of materials, manufacturing, fluid power and thermal/fluid system design	ENGR 200	The Computer Aided Drafting CAD laboratory provides the student with the necessary skills and knowledge in this field. The laboratory is used courses that are directed students in gaining a solid foundation in the fundamentals of computer-aided mechanical drafting. The skills and working knowledge gained will prepare the student to excel in the senior electives and senior design coursework. In addition to drafting skills the laboratory is used for two-and three-dimensional modeling on computer-aided design and drafting systems. Students use software to design and display various objects using SolidWorks™	Apply the principles of mathematics, physics and engineering technology. Use modern engineering tools to analyze and solve technical problems in design and thermal sciences Use modern engineering tools to analyze and solve technical problems in design and thermal sciences.
Fabrication and Design	An appropriate mastery of the knowledge, techniques, skills and modern tools in the areas (and principles) of materials, applied mechanics, strength of materials, manufacturing, fluid power and thermal/fluid system design	ENGR 200 ENGR 210 Da Vinci Innovators	The AET program has access to Prototyping software and equipment for projects in manufacturing. The Prototyping includes three dimensional printing, CNC routing and cutting equipment, modeling software, and welding equipment in which students may use for engineering practice in the engineering graphics course, as well as numerous design and fabrication projects. The lab is also equipped with personal computers with design and manufacturing software such as SolidWorks™ to generate solid modeling of the designed parts. Additional equipment include the following: Three Dimensional Printer, CNC Router, Plasma Cutter, Laser Engraver, 3D modeling software, Injection molding machine, arc welder	Interpret and create engineering drawings following the standard conventions of engineering graphical communication. Illustrate and create multiview and pictorial sketches to aid in the ideation phase of the design process.
Advanced Machining/Finite Element Analysis	To achieve fundamental understanding of the behavior of various material components and their impacts on manufacturing processes The ability to understand math, science, and technology concepts in relation to machine design. Communicate effectively	ENGR 210	The main function of this laboratory is to support CAD/CAM, manufacturing and materials processes courses. The lab will be equipped with CNC machines and coordinate measuring machining (CMM). Students will use these machines for programming and control of machining operations. This laboratory will also support research in the application of intelligent control algorithms for in-process sensing and control of machining operations such as end milling, turning and drilling as well as controlling the cutting force, open architecture controllers, and sensors for in-process measurement and control of geometric properties of the work piece. These processes are very integral to the manufacturing of a mechanical part used in creating advance equipment in automotive and aircraft industries. Major equipment housed in this area include the Computer Controlled Coordinate Measuring Machine (CMM), Instron universal testing machines (Tension/Compression), and the CNC five-axis machine	The ability to understand the practice contained in the applications of technical principles and formulas to useful devices and instruments in the scientific and industrial world.
General Machining and Technology	To achieve fundamental understanding of the behavior of various material components and their impacts on manufacturing processes. The ability to understand how technology impacts society at a local, regional, or global scale.	ENGR 101 ENGR 102 Da Vinci Innovators	In addition to advanced machine equipment the General manual machine-shop equipment will include the following: . Lathe, vertical mill, saws, advanced welding machine. The equipment will provide the basis for general purpose machining for instruction and automotive projects.	Demonstrate the important of the role technology plays in our lives and succeeding generations for the goals of survival, peaceful coexistence, ethical living, safety, and prosperity. Identify the social, political, economic, and ethical issues and implications of future technological changes

COURSE TRANSFERRABILITY

A review of course transfer was conducted in conjunction with admissions departments and engineering programs at several colleges and universities throughout the Commonwealth. The chart below lists the dual enrollment courses and their current transfer equivalencies. Additionally courses considered as a core requirement within an engineering program will list the course prefix and number for the perspective school while courses considered as an elective will be credited as an engineering elective for the perspective school. Admissions policies for each of the colleges and universities requires a minimum grade of "C" for transfer into engineering programs at each school. The list below will continue to be compiled and updated based on further review and continuous improvement of the AET program.

Engineering Courses	VT	UVA	VCU	GMU	ODU	DCC	PHCC
ENGR 101 Introduction to Engineering I	Engineering Elective	ENGR 1620/1621	EGRE-101	TBD**	Engineering Elective	EGR 120	EGR 120
ENGR 102 Introduction to Engineering II	Engineering Elective	ENGR 1620/1621	EGRE-101	TBD**	Engineering Elective	EGR 126	MEC 140
ENGR 200 Engineering Graphics	Engineering Elective	MAE 2000	Engineering Elective	TBD**	Engineering Elective	EGR 115	EGR 123
ENGR 201 Circuit Analysis	TBD**	ECE 2630	EGRE 206	TBD**	Engineering Elective	EGR 235	INS 210
ENGR 210 Statics & Strength of Materials	TBD**	CE 2305	ENGR 102	TBD**	Engineering Elective	EGR 140	EGR 140

Technology Courses*	VT	UVA	VCU	GMU	ODU	DCC	PHCC
INLT 141 Introduction to Logistics	TBD**	NT***	Engineering Elective	TBD**	TBD**	IND 243	IND 243
INLT 161 Engineering Graphics I	Engineering Elective	NT***	Engineering Elective	TBD**	TBD**	EGR 123	EGR 123
INLT 245 Distribution Systems	TBD**	NT***	Engineering Elective	TBD**	TBD**	BUS 234	BUS 234
INLT 270 Introduction to ERP	TBD**	NT***	Engineering Elective	TBD**	TBD**	BUS 255	BUS 255

*Technology courses will not be offered at IALR for the 2014-2015 school year

**TBD – information regarding transferability is pending as of 1/1/13

***NT – course will not transfer

SCHOOLS AND PROGRAMS

All courses offered by VSU will transfer into both engineering and engineering technology programs within the College of Engineering and Technology. Below provides the designation for transferability into programs at other universities and colleges.

VT (Courses will transfer as engineering electives within all engineering programs in the College of Engineering)
UVA (Courses will satisfy core requirements within all engineering programs in the School of Engineering and Applied Science)
VCU (Courses will satisfy core requirements within the mechanical engineering program at the School of Engineering)
ODU (Courses will transfer as engineering electives and satisfy requirements within all engineering programs in the College of Engineering and Technology)

DCC (Courses will satisfy core requirements within the associates of science degree in engineering)

PHCC (courses will satisfy core requirement within the associates of applied science degree in general engineering technology)

POTENTIAL COST SAVINGS

College can be a very expensive proposition with the rising costs of tuition. Below are the typical cost savings that the AET program provides students.

School	AET	VSU	VT	UVA	VCU	GMU	ODU	DCC	PHCC
Cost per credit hour *	\$0	\$321	\$400.75	\$626	\$340.58	\$404.50	\$285	\$132	\$122.50
Cost x 12 credit hours (VSU)	\$0	\$3,852	\$4,809	\$7,512	\$4,086.96	\$4,854	\$3,420	\$1,584	\$1,470
Cost x 21 credit hours (DCC)	\$0	\$6,741	\$8,415.75	\$13,146	\$7,152.18	\$8,484.50	\$5,985	\$2,772	\$2,572.50
Total Cost for all 33 hours	\$0	\$10,593	\$13,224.80	\$20,658	\$11,239.10	\$13,348.50	\$9,405	\$4,356	\$4,042.50

*Undergraduate in-state tuition as listed on the respective university's website as of the fall of 2013