

Program of Studies

For students entering the ninth grade for the first time
in 2011-2012 through 2017-2018

Washington & Lee High School

2019-2020

16380 Kings Highway
Montross, Virginia 22520
804-493-8015
FAX 804-493-0243
CEEB: 471460
Website: wl.wmlcps.org



Guidance Department

Ms. Patricia Eddings, M.A.
Professional School Counselor
eddingspl@wmlcps.org

Ms. Lacy, M.Ed.
Professional School Counselor
lacycp@wmlcps.org

Mrs. Stefanie Payne
Registrar
paynesm@wmlcps.org

Counselor Assignments

Ms. Eddings
All students from A – J

Ms. Lacy
All students from K – Z

Table of Contents

Types of Diplomas	3
Grade Level Classification	4
Transfer of Credits	4
Virginia Board of Education Diploma Seals	5
Grading Scale	6
Grade Point Average/Class Rank/Weighted Classes	6
Honors and Advanced Placement (AP) Courses	6
Dual Enrollment	6
Governor's School	7
Work Credit	7
Special Education Services	7
Guidance and Counseling Services	8
Scheduling Procedures	8
Prerequisites	8
Retaking Courses	8
Adding or Dropping /Credit Recovery	8
Course Descriptions	
English	9,10
Mathematics	11, 12
Science	12, 13
Social Studies	13,14
Foreign Language	15
Physical Education	15
CTE	15-18
Music, Art and Theater Arts	18, 19
Governor's School Courses	19, 21
Northern Neck Technical Center	22-25

TYPES OF DIPLOMAS

The Westmoreland County School Board will award the following types of diplomas and certificates in accordance with state laws and regulations.

To graduate with an **Advanced Studies Diploma**, a student must earn 26 standard units of credit by passing required courses and electives and earn nine verified units of credit by passing end-of-course SOL tests or other assessments approved by the Board of Education. Students also must successfully complete one virtual course, which may be non-credit bearing, to graduate with an Advanced Studies Diploma.

To graduate with a **Standard Diploma**, a student must earn at least 22 standard units of credit by passing required courses and electives and earn at least six verified credits by passing end-of-course SOL tests or other assessments approved by the Board of Education.

Students must also:

- Earn a board-approved career and technical education credential to graduate with a Standard Diploma; and
- Successfully complete one virtual course, which may be non-credit bearing.

An **Applied Studies Diploma** is available to students with disabilities who complete the requirements of their IEP and do not meet requirements for other diplomas.

Subject Area	Standard Diploma		Advanced Diploma	
	Standard Credits Effective with first-time ninth graders in 2011-2012 through 2017-2018	Verified Credits	Standard Credits Effective with first-time ninth graders in 2011-2012 through 2017-2018	Verified Credits
English	4	2	4	2
Mathematics	3	1	4	2
Laboratory Science	3	1	4	2
History & Social Sciences	3	1	4	2
Health & Physical Education	2		2	
Fine Arts or CTE			1	
Foreign Language, Fine Arts or CTE	2		3	
Economy & Personal Finance	1		1	
Electives	4		3	
Student Selected Tests		1		1
Total	22	6	26	9

Mathematics requirements for Standard Diploma shall include selections from among: Algebra I; Geometry; Algebra, Functions and Data Analysis; Algebra II or other mathematics courses above Algebra II.

Mathematics requirements for Advanced Diploma shall include at least three different course selections from among: Algebra I; Geometry; Algebra II; or other mathematics courses above Algebra II.

Science requirements for Standard Diploma shall include course selections from at least two different science disciplines: earth sciences, biology, chemistry or physics.

Science requirements for Advanced Diploma shall include course selections from at least three different science disciplines from among: earth sciences, biology, chemistry, or physics

History and Social Science requirements for Standard Diploma shall include U.S. and Virginia History, U.S. and Virginia Government, and one course in world history or geography.

History and Social Science requirements for Advanced Diploma shall include US History, US Gov't and two in World History or World Geography or both.

Elective requirements for Standard Diploma: Courses to satisfy this requirement shall include at least two sequential electives as required by the Standards of Quality. Sequential electives means any series of courses that are used to fulfill the elective requirements for a standard diploma in which the content increases or expands in scope and sequence as students move through the various levels of the courses. To further assist local school divisions to ensure that students comply with the requirement, the following guidance is given:

- The two sequential electives may be in any discipline in as long as the courses are not specifically required for graduation.
- Courses used to satisfy the one unit of credit in a fine or practical art required for the standard may be used to partially satisfy this requirement.

- Courses used to satisfy the one unit of credit in a fine or practical art required for the standard may be used to partially satisfy this requirement.
- Guidelines for sequential electives in career and technical education programs are available from the Department of Education. A sequence that includes an exploratory course followed by an introductory course cannot be used to satisfy this requirement; however, an introductory course followed by another level of the same course of study can be used.

Foreign Language requirements for Advanced Diploma: Shall include three years of one language or two years of two languages.

GRADE LEVEL CLASSIFICATION

Grade Level Classification is based on the total number of standard credits.

Assignment to 10th grade (Sophomore)

To be assigned to grade 10, a student must successfully complete five (5) 9th grade courses, including English 9, and two of the following: math, science, and health and physical education.

Assignment to 11th grade (Junior)

To be assigned to grade 11, a student must complete a minimum of ten (10) standard credits, including two English, one in mathematics, one in science, and one in social studies.

Assignment to 12th grade (Senior)

To be assigned to grade 12, a student must complete a minimum of fifteen (15) standard credits, including three in English, two in science, two in mathematics, two in social studies including United States Virginia history, and/or be enrolled in subjects that will complete graduation requirements by the end of the academic year (June graduates).

Student must pass English at each grade level in order to be in the next grade level.

Grade level changes will occur at the beginning of the school year.

TRANSFER OF CREDITS (Classes of 2015-2021)

Entering Washington & Lee High School	Standard Diploma Verified Credits	Advanced Studies Diploma Verified Credits
At the beginning of or during 9th grade	2 English + 1 Math, 1 Science, 1 Social Studies, and 1 Student's choice	2 English + 2 Math, 2 Science, 2 Social Studies, and 1 Student's choice
At the beginning of or during 10th grade or at the beginning of 11th grade	1 English + 1 Math, 1 Science, and 1 Social Studies	2 English + 1 Math, 1 Science, 1 Social Studies, and 1 Student's choice
During 11th grade or at the beginning of 12th grade	1 English + 1 Student's choice	1 English + 3 Student's choice


Transferring during 12th grade - Students should be given every opportunity to earn a diploma; if this is not possible, the school division should arrange to have the previous school award the diploma; or seek a waiver of the verified credit requirement from VDOE.

TRANSFER OF CREDITS (Classes of 2022 and beyond)

Entering Washington & Lee High School	Standard Diploma Verified Credits	Advanced Studies Diploma Verified Credits
At the beginning of or during 9th grade	All requirements	All requirements
At the beginning of or during 10th grade	All requirements	All requirements
At the beginning of 11th grade	All requirements, except only four verified credits required: English (1), mathematics (1), history (1), and science (1)	All requirements, except only six verified credits required: English (2), mathematics (1), history (1), science (1), and student selected (1)

During 11th grade or at the beginning of 12th grade	All requirements, except only two verified credits required: English (1) and student selected (1)	All requirements, except only four verified credits required: English (1) and student selected (3)
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Transferring during 12th grade - Students should be given every opportunity to earn a diploma; if this is not possible, the school division should arrange to have the previous school award the diploma; or seek a waiver of the verified credit requirement from VDOE.

Virginia Board of Education Diploma Seals	
Students who demonstrate academic excellence may be eligible for one or more of the following awards. Diploma Seals are attached to the diploma and presented in June at commencement.	
The Governor’s Seal	<ul style="list-style-type: none"> ● Advanced Diploma <i>AND</i> ● Average GPA of “B” or better (3.0) <i>AND</i> ● Successful completion of college level course work that will earn the student at least 9 transferrable college credits in AP or Dual Enrollment courses
Board of Education Seal	<ul style="list-style-type: none"> ● Standard or Advanced Diploma <i>AND</i> ● Average GPA of “A” or better (4.0)
The Board of Education’s Career and Technical Education Seal	<ul style="list-style-type: none"> ● Standard or Advanced Diploma <i>AND</i> ● Complete a prescribed sequence of courses in a career and technical education concentration or specialization and maintain a “B” or better average in those courses, <i>OR</i> ● Pass an examination or an occupational competency assessment in a career and technical education concentration or specialization that confers certification or an occupational competency credential from a recognized industry, trade, or professional association, <i>OR</i> ● Acquire a professional license in that career and technical education field from the Commonwealth of Virginia
The Board of Education’s Seal for Science, Technology, Engineering, and Mathematics (STEM)	<p>The Board of Education’s STEM Seal shall be awarded to students who earn either a Standard Diploma or an Advanced Studies Diploma and satisfy all Math and Science requirements for the Advanced Studies diploma with a “B” average or better in all course work, and</p> <ul style="list-style-type: none"> ● successfully complete a 50 hour or more work-based learning opportunity in a STEM area, and ● satisfy all requirements for a Career and Technical Education concentration. A <i>concentration</i> is a coherent sequence of two or more state-approved courses as identified in the course listing within the CTE Administrative Planning Guide , and ● pass one of the following: <ul style="list-style-type: none"> ○ a Board of Education CTE STEM-H credential examination, or ○ an examination approved by the Board that confers a college-level credit in a STEM field.
The Board of Education’s Seal for Excellence in Civics Education	<ul style="list-style-type: none"> ● Standard or Advanced Studies Diploma <i>AND</i> ● Complete Virginia and United States History and Virginia and United States Government courses with a grade of “B” or higher <i>AND</i> ● Have good attendance and no disciplinary infractions as determined by local school board policies <i>AND</i> ● Complete 50 hours of voluntary participation in community service or extracurricular activities. <ul style="list-style-type: none"> ➢ Activities that would count include the following: volunteering for a charitable or religious organization that provides service to the poor, sick, or less fortunate; participating in Boy Scouts, Girl Scouts or similar youth organizations; participating in JROTC; participating in political campaigns or government internships, or Boys State, Girls State, or Model General Assembly; participating in school-sponsored extracurricular activities that have a civic focus. (Any student who enlists in the United States military prior to graduation will be deemed to have met this community service requirement.)
Board of Education’s Seal of Biliteracy	<p>Awarded to students who earn a Board of Education approved diploma <i>AND</i></p> <ul style="list-style-type: none"> ● Pass all required End-of-Course (EOC) Assessments in English reading and writing at the proficient or higher level ● Demonstrate proficiency at the intermediate-mid level or higher in one or more languages other than English as demonstrated through an assessment from a list approved by the

	Superintendent of Public Instruction. American Sign Language qualifies as a language other than English.
Board of Education’s Seal for Excellence in Science and the Environment	<p>The Board of Education’s Seal for Excellence in Science and the Environment is awarded to students who enter the ninth grade for the first time in the 2018-2019 year and thereafter, and meet each of the following criteria:</p> <ul style="list-style-type: none"> • Earn either a Standard or Advanced Studies Diploma • Complete at least three different first-level board-approved laboratory science courses and at least one rigorous advanced-level or postsecondary-level laboratory science course, each with a grade of “B” or higher • Complete laboratory or field-science research and present that research in a formal, juried setting • Complete at least 50 hours of voluntary participation in community service or extracurricular activities that involve the application of science such as environmental monitoring, protection, management, or restoration.

**GRADE SCALE & GRADE POINT AVERAGE
CLASS RANK & WEIGHTED CLASSES**

Grade Scale

- A = 92-100
- B = 84-91
- C = 77-83
- D = 70-76
- F = Below 70

A **Grade Point Average (GPA)** is the average of all final grades in all high school subjects. A GPA is calculated for each student at the end of each semester. For seniors, an additional GPA calculation is made at mid-point of second semester. After calculation of the GPA, students are ranked according to that figure.

WEIGHTED COURSES

The subjects listed below are designated as “weighted courses”:

- Advanced Placement Courses (AP) 5.0
- Dual Enrollment Courses (DE) 5.0
- Honors Courses (H) 4.5

The following point system is used in computing GPA’s and rank in class:

<u>Regular Courses</u>	<u>Weighted Honors (H) Courses</u>	<u>Weighted AP & DE Courses</u>
A = 4 points	A = 4.5 points	A = 5 points
B = 3 points	B = 3.5 points	B = 4 points
C = 2 points	C = 2.5 points	C = 3 points
D = 1 point	D = 1.5 points	D = 2 points
F = 0 points	F = 0 points	F = 0 points

ADVANCED LEVEL (H, AP, and DE) COURSES

These in-depth courses are designed for the student who has well developed skills and intense personal interest in a particular subject area. The Advanced Placement (AP) and Dual Enrollment (DE) courses provide students with the opportunity to pursue college-level studies while still in high school and to receive college credit when entering college if minimum score requirements are met. All AP classes will be counted as a weighted grade. Criteria considered for inclusion in advanced level

courses include test scores, grades in previous related courses, ability, and teacher recommendation. College credit is determined by the individual requirements of the post-secondary institution. Students and parents will be asked to sign a contract regarding DE, AP and Honors classes.

DUAL ENROLLMENT (DE)

Dual Enrollment allows high school students to meet the requirements for high school graduation while simultaneously earning college credit. Students should understand that the amount of work necessary to succeed in dual enrollment courses is greater than in high school courses. In addition, dual enrollment courses become a part of a student's permanent college transcript. It is important to do well in these courses to realize all the benefits of dual enrollment.

Interested students must first take the college placement exam. They must also meet the following criteria:

- All dual enrollment students, both academic and career and technical, must meet college placement requirements.
- Students must receive a recommendation by high school official.
- Parents must provide consent prior to student enrollment.

These students are considered high school students and NOT college students, therefore, Washington & Lee High School's rules, regulations, deadlines, and guidelines have precedence over Rappahannock Community College's.

GOVERNOR'S SCHOOL (GS)

Washington & Lee students may participate in the Chesapeake Bay Governor's School for Marine and Environmental Science Program. The Governor's School provides high ability 10th, 11th and 12th grade students from the Northern Neck and Middle Peninsula with a rigorous curriculum designed to broaden their opportunities through enrichment, exploratory, investigative, and career awareness experiences. Through the integration of math, science, technology, and research, woven with marine and environmental sciences, students have the opportunity to foster an appreciation and respect for environmental issues. Students are offered admission to the program on a competitive basis in the winter of the ninth grade. Students may earn dual enrollment credits through each course through Rappahannock Community College (RCC).

EARLY COLLEGE SCHOLARS PROGRAM

The Early College Scholars program allows eligible high school students to earn at least 15 hours of transferable college credit while completing the requirements for an Advanced Studies Diploma. The result is a more productive senior year and a substantial reduction in college tuition. Students earning a college degree in seven semesters instead of eight can save an average of \$5,000 in expenses.

To qualify for the Early College Scholars program, a student must:

- Have a "B" average or better;
- Be pursuing an Advanced Studies Diploma; and
- Take and complete college-level course work (i.e., Advanced Placement, International Baccalaureate, Cambridge, or dual enrollment) that will earn at least 15 transferable college credits.

Early College Scholars are supported by Virtual Virginia and the Commonwealth College Course Collaborative. Virtual Virginia provides statewide access to college-level courses while the Commonwealth College Course Collaborative defines the subjects high school students can complete and receive college degree credit from participating public and private colleges and universities. Applications are available from your high school.

WORK CREDIT

Only juniors and seniors are eligible.

Students must complete 135 hours with an employer per credit hour a semester. Obtaining work experience is the priority for this class. Credit will only be given to those that accumulate the required hours and follow professional work habits and procedures. Pay stubs or verification from the employer on the number of hours worked each 9 weeks is required to receive

the credit. A student is required to write a job description detailing the nature of his/her place of employment, position, and write an essay describing the lessons taken from the work experience.

SPECIAL EDUCATION SERVICES

Washington and Lee High School provides a program of studies in core academic subjects to students with disabilities. All students with disabilities who are eligible for special education services participate in the secondary curriculum according to their Individualized Education Plans (IEP). A variety of programs are provided to meet the students' individual needs including supportive and related services, resource assistance, inclusion classes, and separate classes. Resource classes offer training in study skills, social skills, organization skills, and other educational needs identified on the students' IEP's. Inclusion classes are co-taught and in the general education setting while separate classes are taught by one instructor in a small group setting. Separate classes provide specialized instruction in the core academic and elective areas.

Transition plans are developed as a part of the IEP for all students in special education beginning at the age of fourteen and focus on education, employment, and adult/community living. The purpose of the transition plan is to specify services such as career awareness, evaluation; vocational training, work adjustment training, and community based vocational education, adult agency linkages, or other services appropriate for the student to meet postsecondary goals.

GUIDANCE AND COUNSELING SERVICES

The purpose of the Guidance Department is to assist students in academic, educational, personal, social, and career development.

Counselors assist students in planning and selecting a program of study consistent with students' interests, skills and abilities. A student's past performance, possible post-secondary plans, and results of standardized tests are taken into consideration in planning his/her program. Parents are encouraged to become actively involved in the selection of their son's/daughter's schedule. Counselors are eager to meet with parents to develop a strong partnership.

SCHEDULING PROCEDURES

Students and parents should consider course selection carefully. It is necessary for students to determine their class choices with commitment to completion of those classes. **THERE WILL BE NO SCHEDULE CHANGES TO ACCOMMODATE STUDENTS' CHOICE OF INSTRUCTOR.**

After meeting with the students and parents as a group, students and parents will complete the Scheduling Request Form. A counselor then reviews course selections. Students and parents may make an appointment to talk to a counselor to answer any additional questions you may have about your schedule.

No student may officially drop, add or change a class without approval of guidance, administration, and parent/guardian.

Any changes in class schedules will be strongly discouraged.

Schedule adjustments will be made under the following circumstances only:

- a. Courses passed in summer school;
- b. An incomplete schedule;
- c. An original class choice is not available due to insufficient enrollment;
- d. The student has selected two classes which are offered only once in the school day and both are offered in the same time period;
- e. No seats are available due to the number of requests;
- f. Balancing of class sizes;
- g. Initiated by counselor, administrator or teacher, based upon demonstrated performance, aptitude and achievement test scores.

PREREQUISITES

As you plan and review courses for scheduling, please pay attention to required prerequisites identified above the explanation of the course in the course description. For example, requirements include successful completion of English 9 for English 10 and a C or better in foreign language classes in order to move to the next level.

RETAKING COURSES

Students who wish to retake a course need to be aware that both grades will be included when determining the overall grade point average (GPA). On the transcript, both grades will be shown. The course cannot be counted twice for credit.

ADDING OR DROPPING A CLASS

Students who request to drop a course must do so by September 7, 2018. In the event that a student would find it necessary to request a change in schedule, students must complete a "Request for Schedule Change Form".

A student who withdraws from a class before the first four (4) school days will do so without penalty. The student will receive a "WF" (withdrew failing) or a "WP (withdrew passing).

CREDIT RECOVERY CLASSES

Washington and Lee High School provides an online credit recovery tool for students to regain the academic courses they have lost. The program is a standards based online curriculum that does provide a rigorous coursework for students to recover classes. Seats are limited and are required to have the recommendation and approval of guidance and administration.

COURSE DESCRIPTIONS

ENGLISH

The English program at Washington & Lee High School focuses on the oral language, reading, writing, and research skills necessary for success beyond high school. Students are required to earn four English standard credits before graduation. Students must pass the Virginia Standards of Learning End-Of-Course Writing and Virginia Standards of Learning End-Of-Course Reading, Literature, and Research assessments to earn two units of verification. The tests are cumulative and cover the SOLs from grades 9, 10 and 11. Students must pass both SOL tests and the course to receive the two verified credits that are required for graduation.

ENGLISH 9 (1130)

Prerequisite: Promotion to grade 9.

English 9 focuses on: evaluating and assessing information and persuasive techniques in media messages; developing vocabulary with attention to connotation, idioms and allusions; literary terms and genres being applied to writing and analyzing literature; research and reporting that will be supported by the use of print, electronic databases, online resources, and other media; the citation of sources of information using a standard method of documentation; distinguishing between reliable and questionable sources of information; writing that encompasses narrative, expository and persuasive forms for a variety of purposes and audiences; and the correct use of language, spelling, and mechanics by applying grammatical conventions in writing and speaking.

HONORS ENGLISH 9 (1130H) (Weighted- 4.5)

Prerequisite: Promotion to grade 9. Grade A or B in previous English course; or Grade of C in previous English course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

Honors English 9 covers the same skills as stated in the Standard 9 description but at a more in-depth and accelerated pace. Honors students must be self-motivated, accountable and well organized in order to be successful.

ENGLISH 10 (1140)

Prerequisite: Successful completion of English 9

English 10 focuses on: communicating in small-groups through learning activities; examining, analyzing and producing media messages; the development of vocabulary, with attention to connotations, idioms, allusions and evolution of language; reading and analyzing literary texts from a variety of eras and cultures – attention will be given to the analysis of nonfiction texts; critiquing the writing of peers and professionals, using analysis to improve writing skills; building of research skills by crediting sources, and presenting information in a format appropriate for content; and expanding grammar knowledge as the students presents, writes, and edits material, applying the conventions of language.

HONORS ENGLISH 10 (1144H) (Weighted – 4.5)

Prerequisite: Successful completion of English 9. Grade A or B in previous Honors course; or Grade of an A or B in a Standard Course with teacher recommendation; or Grade of C in previous Honors course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

Honors English 10 covers the same skills as stated in the Standard 10 description but at a more in-depth and accelerated pace. Honors 10 strives to prepare students to continue on to the Honors 11 or AP 11 course. Honors student must be self-motivated, accountable and well organized in order to be successful.

ENGLISH 11 (1150)

Prerequisite: Successful completion of English 9 and English 10

English 11 focuses on: making and analyzing information and persuasive oral presentations, with attention to the accuracy of evidence and the effectiveness of delivery and the examination of how media influences beliefs and behaviors; the student will continue to develop and expand vocabulary; the study of both classic and contemporary American literature; using nonfiction texts to draw conclusions and make inferences citing textual support; writing clear and accurate personal, professional, and informational correspondence and reports for research and other applications; grammar development will continue through the application of rules for sentence formation usage, spelling, and mechanics; and developing informative and persuasive writings by locating, evaluating, synthesizing, and documenting information following ethical and legal guidelines.

HONORS ENGLISH 11 (1150H) (Weighted – 4.5)

Prerequisite: Successful completion of English 9 and English 10. Grade A or B in previous Honors course; or Grade of an A or B in a Standard Course with teacher recommendation; or Grade of C in previous Honors course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

Honors English 11 covers the same skills as stated in the Standard 11 description but at a more in-depth and accelerated pace. Honors 11 strives to prepare students to continue on to the Honors 12, AP 12, or RCC Dual Enrollment course. Honors students must be self-motivated, accountable and well organized in order to be successful.

AP ENGLISH LANGUAGE AND COMPOSITION (1196) (Grade 11) (Weighted – 5.0) Online only

Prerequisite: Successful completion of English 9, English 10 & Honors English 11. Grade A in previous Honors course; or Grade of an A or B in a Honors Course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

The purpose of this course is “to enable students to read complex texts with understanding and to write prose of sufficient richness and complexity to communicate effectively with mature reader” (The College Board, AP® English Course Descriptions, May 2009, May 2010, p. 8). It is organized according to curricular requirements outlined by the College Board, and, as such, students will have multiple opportunities to learn within a proven rhetorical framework. Readings include expository, analytical, and argumentative texts from a variety of authors and historical contexts. In particular, our student will focus on American authors of the nineteenth and twentieth centuries. Writing assessments include formal assignments, such as rhetorical précis’s and research papers, as well as information assignments, such daily journal entries and timed responses. In addition to written text, student will also analyze graphics and visual images to determine their significance within the context of literature. Students take the SOL reading and SOL Writing tests at the completion of the course. Students are required to take the AP exam associated with this course. Students not taking the exam will not earn the additional quality point.

ENGLISH 12 (1160)

Prerequisite: Successful completion of English 9, 10, & 11.

English 12 focuses on: using organizational skills as well as verbal and nonverbal presentation skills to plan and deliver an effective oral presentation, choosing language and tone appropriate to the audience and purpose; using technology and an understanding of media to create, organize, and display knowledge in ways others can access, view, and use; expanding general and specialized vocabulary through speaking, listening, reading, and viewing; analyzing British literature and literature of other cultures, recognizing major literary forms and their elements; using nonfiction-texts to analyze and synthesize information to solve problems; writing that will include the production of informational, expository, and persuasive/argumentative papers, logically organized demonstrating knowledgeable judgments, and effective conclusions; producing a well-documented major

research product, by locating, evaluating, synthesizing, and documenting information following ethical and legal guidelines; and demonstrating advanced knowledge of grammatical conventions through writing, editing, and speaking.

HONORS ENGLISH 12 (1160H) (Weighted – 4.5)

Prerequisite: Successful completion of English 9, 10, & 11. Grade A in previous Honors course; or Grade of an A or B in a Standard Course with teacher recommendation; or a grade of C in previous Honors course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

Honors English 12 covers the same skills as stated in the Standard 12 description but at a more in-depth and accelerated pace. Honors students must be self-motivated, accountable and well organized in order to be successful.

AP ENGLISH LITERATURE (1195) (12th grade) (Weighted – 5.0) Online only

Prerequisite: Successful completion of English 9, 10, 11 & Honors English 12. Grade of A or B in previous AP English Language and Composition (AP 11); or grade of an A in previous Honors course; or grade of an A or B in previous Honors course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

The purpose of this course is to “engage students in careful reading and critical analysis of imaginative literature.” It is organized according to curricular requirements outlined by the College Board, and, as such, students will have multiple opportunities to learn within a proven rhetorical framework. The readings build upon and complement the reading done in previous English course so that by the time students complete this AP course they will have read works from several genres and periods – from 16th to the 21st century. Through the close reading of selected texts, students deepen their understanding of the ways writers use language to provide both meaning and pleasure for their readers. As they read, students consider a work’s structure, style and themes, as well as such smaller-scale elements as the use of figurative language, imagery, symbolism and tone. Students are required to take the AP exam associated with this course. Students not taking the exam will not earn the additional quality point.

YEARBOOK (1215)

Limited to 11th and 12th graders

Yearbook focuses on: using design skills and techniques to plan and create the yearbook and using organizational skills to sell and promote the yearbook. *Class is limited to 20 students.* Students are required to apply to this class.

MATHEMATICS

The mathematics program at Washington & Lee High School emphasizes the mathematics students will need for study beyond high school, for careers, and for effective citizenship. All students are encouraged to study mathematics each year they are in school. Course offerings make it possible for students to progress as far as their achievement allows.

INTRODUCTION TO ALGEBRA I (3200ALG)

Elective credit only.

Students are recommended for this course from their 8th grade teacher. In this course, students will study properties and operations of the real number system, algebraic expressions, equations and inequalities in one variable, exponents, and statistics. Students will take Algebra 1 upon successful completion of this course.

ALGEBRA I (3130)

Prerequisite: Successful completion of Math 8.

In this course, students will be exposed to practical applications of algebra. The major topics of study will include properties and operations of the real number system, algebraic expressions, equations and inequalities in one variable, exponents, polynomials, graphing, systems of equations and inequalities, function analysis, quadratics, variation and statistics. Students will take the associated SOL test at the completion of the course. Upon successful completion of this course and passing the SOL test, students will receive a math verified credit.

INTRODUCTION TO GEOMETRY (3200G)

Prerequisite: Successful completion of Algebra I. Elective credit only.

Students are recommended for this course from their Algebra 1 teacher. In this course, students will study the basics principles of geometry (point, line, plane), congruencies, parallelism, congruent figures, and angle relationships. Students will take Geometry upon successful completion of this course.

GEOMETRY (3143)

Prerequisite: C or better in Algebra I.

In this course, students will be exposed to practical applications of Euclidian Geometry. Topics include basic principles of geometry (point, line, and plane); congruencies, similarities, triangle inequalities, parallelism, perpendicularity, polygons, area of geometric figures, transformations, congruent and similar figures, and an introduction to three-dimensional figures. Students will develop formal and informal deductive reasoning skills which they will apply to the construction of formal proofs. Students will take the SOL test at the completion of this course. Upon successful completion of this course and passing the SOL test, students will receive a math verified credit.

ALGEBRA, FUNCTIONS AND DATA ANALYSIS (3134)

Prerequisite: Successful completion of Algebra I.

This course may be used as a required math credit for the standard diploma track. In this course, students will strengthen conceptual understanding in mathematics and develop connections between statistics and algebra. Topics include exponential and logarithmic functions, linear programming, conditional probability, and systems of equations and inequalities. Students will NOT take an SOL test at the completion of this course.

ALGEBRA II (3135)

Pre-Requisite: C or better in Geometry

In this course, students will be exposed to advanced algebraic concepts that build upon skills learned in previous courses. Topics include polynomials, rational and radical expressions, systems of equations and inequalities, probability and statistics, sequences and series, graphing of the function families, and absolute value and quadratic equations. Students will take the SOL test at the completion of this course. Upon successful completion of this course and passing the SOL test, students will receive a math verified credit.

TRIGONOMETRY (3150)

Prerequisite: C or better in Algebra 2

In this course, students will learn the fundamentals of triangle and circular trigonometry. Right triangular trigonometry includes radian measures of angles, graphs of circular functions, identities, special angle formulas, and the Laws of Sines and Cosines. Connections of applications of trigonometry in sound, motion, surveying, and biorhythms will be introduced. Students will NOT take an SOL test at the completion of this course.

MATH ANALYSIS/PRE-CALCULUS (3162)

Pre-Requisite: C or better in Geometry & Algebra II

In this course, students will use mathematical skills to apply abstract reasoning to the study of advanced topics. This course provides the treatment of trigonometry (triangular and circular) through the study of trigonometric definitions, graphs, applications, equations and inequalities. Students will NOT take an SOL test at the completion of this course.

CALCULUS (3200)

Prerequisite: C or better in Pre-Calculus

In this course, students will be introduced to limits, derivatives, and integrals. The students will perform basic calculus functions and learn multiple strategies for differentiating and integrating functions. Students will explore real world applications of differential and integral calculus. Students will NOT take an SOL test at the completion of this course.

AP (ADVANCED PLACEMENT STATISTICS (3192) Online only

Prerequisites Successful completion of Algebra 2. Recommended: Successful completion of Pre-Calculus/Mathematical Analysis and Mathematical maturity and quantitative reasoning ability.

Advanced Placement Statistics is a college-level, non-calculus based course in introductory statistics. This course is designed to present strategies for collecting, organizing, analyzing, and drawing conclusions from data. Students will work on projects involving the hands-on gathering and analysis of real world data. They will learn to interpret and judge the statistical information in the world around them. Computers and calculators will allow students to investigate and explore statistical concepts. Effective communication skills will be developed through regular written analysis of real data. Student work will be

required outside of class time. Students are required to take the AP exam associated with this course. Students not taking the exam will not earn the additional quality point.

AP (ADVANCED PLACEMENT) CALCULUS AB (3177) Online only

Prerequisite: C or better in Calculus

In this course, students will explore the topics of limits, continuity, derivatives, and integrals. These ideas are examined using a multi-layered approach including the verbal, numerical, analytical and graphical analysis of polynomial, rational, trigonometric, exponential, and logarithmic functions and their inverses. The student will relate the connections among these approaches, Students will be required to synthesize knowledge of these topics to solve applications that model physical, social and/or economical situations. These applications emphasize derivatives as rate of change, local linear approximations, optimizations and curve analysis, and integrals as Riemann sums, area of regions, volume of solids with known cross sections, average value of functions, and rectilinear motions. Students will NOT take an SOL test at the completion of this course. Students may opt to take the Advanced Placement test at the completion of this course.

SCIENCE

The Westmoreland County Public Schools is committed to providing a comprehensive science program. The ideal science curriculum engages all students while providing opportunities for those students demonstrating a heightened science interest and aptitude. A full range of science offerings is available to all students. In addition, enhanced science opportunities are provided through the Governor's School and Dual Enrollment science courses.

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EARTH SCIENCE (4210)

Prerequisite: Promotion to grade 9.

This course is designed to teach the students six basic subjects: measurements, problem solving skills, astronomy, meteorology, oceanography, and geology. The students will learn the basic subjects using hands on activities, labs, and classroom work. At the end of the course, the students will better understand the physical world in which they live. Earth Science may be taken in the 9th or 10th grades. Students will take the associated SOL test at the completion of the course.

HONORS EARTH SCIENCE (4210H) (Weighted – 4.5)

Prerequisite: Grade A or B in previous Honors course; or Grade of an A or B in a Standard Course with teacher recommendation; or Grade of C in previous Honors course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

Honors Earth Science covers the same skills as stated in the Standard Earth Science description but at a more in-depth and accelerated pace. Honors students must be self-motivated, accountable and well organized in order to be successful. Students will take the associated SOL test at the completion of the course.

BIOLOGY (4310)

Prerequisite: Promotion to grade 9.

Biology is the study of life. During the course of the year, students will make observations, form hypotheses and manipulate variables to form conclusions based on the data that they have gathered. Other topics of study will include cell theory, agents of disease, photosynthesis, human health concerns, genetics, and the classification and diversity of organisms. Biology may be taken in the 9th or 10th grades. Students will take the associated SOL test at the completion of the course.

HONORS BIOLOGY (4310H) (Weighted – 4.5)

Prerequisite: Grade A or B in previous Honors course; or Grade of an A or B in a Standard Course with teacher recommendation; or Grade of C in previous Honors course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

Honors Biology covers the same skills as stated in the Standard Biology description but at a more in-depth and accelerated pace. Honors students must be self-motivated, accountable and well organized in order to be successful. Students will take the associated SOL test at the completion of the course.

ECOLOGY \ BIOLOGY II (4340)

Prerequisites: Biology

Ecology is a laboratory science course in which students study the interactions between humans, plants, animals, and

the physical environment. Students will apply knowledge from earth science, biology, and chemistry to study and understand the forces that affect ecosystems. This laboratory science will incorporate a variety of hands-on activities both indoors and outdoors. Student projects and problem solving will be emphasized.

BIOLOGY II-ANATOMY (4340)

Prerequisites: Biology

A study of the normal structure (gross and microscopic) and functioning of the integumentary, skeletal, muscular, and nervous systems of the human body.

EARTH SCIENCE II-OCEANOGRAPHY (4250)

Prerequisites: Earth Science

Oceanography is a discipline of science that records and describes the features of the oceans. Oceanography uses a different approach and is a combination of four sciences in the ocean realm. However, oceanography also involves engineering to develop devices that will take scientists to the depths and everywhere underwater.

CHEMISTRY (4410)

Prerequisite: Algebra I

Students in these courses study matter, including its properties and the changes it undergoes. Emphasis is placed on a mathematical approach to chemical principles and on developing laboratory skills. Chemistry is designed for students who have less background in math. Students will take the associated SOL test at the completion of the course.

HONORS CHEMISTRY(4410H) (Weighted – 4.5)

Prerequisite: Algebra I with a B or better grade. Grade A or B in previous Honors course; or Grade of an A or B in a Standard Course with teacher recommendation; or Grade of C in previous Honors course with teacher recommendation; or if the student does not fit into any of the above categories the parent must have a conference with Guidance before placement will be considered.

This class will move at a faster pace than Chemistry and will cover topics of study in greater depth. Students in these courses study matter, including its properties and the changes it undergoes. Emphasis is placed on a mathematical approach to chemical principles and on developing laboratory skills. Honors Chemistry is designed for students who have a **strong** background in math. Students will take the associated SOL test at the completion of the course.

HONORS PHYSICS I (4510H) (Weighted – 4.5)

Prerequisite: Algebra II

This course is a study of the basic concepts of classical mechanics, thermal physics, and thermodynamics. Emphasis is placed on understanding the relationships inherent in physical phenomena, but also being able to model those phenomena mathematically. Laboratory investigation is an integral and important part of the course. A goal of the course is to prepare students to be successful in rigorous science courses in college.

HONORS PHYSICS II (4520H) (Weighted -4.5)

Prerequisite: Algebra II

This is a continuation of the study of physics begun in Honors Physics I. The focus this semester is on wave phenomena, electricity and electromagnetism, relativity, subatomic physics, and current views of fundamental particles and forces. As in first semester, mathematical modeling, laboratory work, and preparation for success in college are emphasized.

SOCIAL STUDIES

In grades 9-12, three years of social studies are required for graduation from high school in the state of Virginia: World History and Geography, Virginia and US History, and Virginia and US Government. Standard Diploma candidates must earn three social studies credits. Advanced Studies Diploma students must earn four social studies credits including these three courses. There are also a number of elective courses in social studies.

WORLD HISTORY I (2215)

This freshman level course which will be taught at the middle school in eighth grade studies the origin of western civilization and its impact on us today from prehistoric times to 1500 A.D. Emphasis is placed on Egypt, Ancient Middle East, Greece, Rome, the Middle Ages, and the Renaissance. Historical emphasis is placed on such areas as daily life, architecture, art, music, religion, and philosophy. This course provides a strong background for students on the traditions that form the basis of our society: our language, laws, religions, and economic systems. Students will participate in writing and thinking skills, interpreting charts and graphs, history projects, book reviews, current events, geographic skills and use of computer technology.

Students will take the associated SOL test at the completion of the course.

GLOBAL STUDIES (2997) (Elective)

This course will allow students to explore major regions around the world and to study global issues, cultures, and connections. Students will cross many academic disciplines including geography, history, language and the arts. The major civilizations of the Middle East, China, India, Sub-Saharan Africa, and Latin American will be analyzed. Among the skills students can develop are issue analysis, problem solving and research/investigation. Within each unit of study, students will explore the region geography and influences, religion, language, art, economic issues, political issues and key historic developments.

WORLD HISTORY II (2216)

This history course acts as a continuation of World History I. The course stresses Modern European History. It begins with the European Renaissance and continues through the development of modern European nations, the French Revolution, Industrial Revolution, the World Wars, and the world today. While considering all relevant regions and events, the course will analyze cultural, economic, political, and social developments, emphasizing connections to contemporary issues. Students will participate in writing and thinking skills, interpreting charts and graphs, history projects, book reviews, current events, geography skills, and utilizing computer technology. Students will take the associated SOL test at the completion of the course.

VIRGINIA AND UNITED STATES HISTORY (2360)

This junior level course will examine the important people, institutions, and events from the Age of Exploration through the present day. While providing a strong factual survey of America, the crux of this course is an in-depth analysis of the important ideas and movements that help shape the American story. Students will participate in writing and thinking skills, interpreting charts and graphs, history projects, current events, geography skills, and utilizing computer technology. Students will take the associated SOL test at the completion of the course.

UNITED STATES AND VIRGINIA GOVERNMENT (2440)

This senior level course provides the tenets and underlying principles contained in the U.S. and VA Constitutions. Our understanding of the structure and operation of federal, state and local governments will highlight a deeper comprehension of the process of policymaking; with emphasis on economics, foreign affairs, and civil rights issues.

HONORS UNITED STATES AND VIRGINIA GOVERNMENT (2440H) (Weighted – 4.5)

This senior level course provides the tenets and underlying principles contained in the U.S. and VA Constitutions. Our understanding of the structure and operation of federal, state and local governments will highlight a deeper comprehension of the process of policymaking; with emphasis on economics, foreign affairs, and civil rights issues. Honors Government covers the same skills as stated in the Standard Government description but at a more in-depth and accelerated pace. Honors students must be self-motivated, accountable and well organized in order to be successful.

AP US GOVERNMENT AND POLITICS – US (2445) (Weighted – 5.0)

Prerequisite: Juniors and Seniors with at least a B in VA/US History AND a passing score on RCC placement test AND a teacher recommendation.

AP United States Government and Politics introduces students to key political ideas, institutions, policies, interactions, roles, and behaviors that characterize the political culture of the United States. The course examines politically significant concepts and themes, through which students learn to apply disciplinary reasoning, assess causes and consequences of political events, and interpret data to develop evidence-based arguments. This class will prepare students for the national AP exam on the subject. Students are required to earn a 3, 4, or 5 on the AP Exam to be eligible for college credit. Students are required to take the AP exam associated with this course. Students not taking the exam will not earn the additional quality point.

FOREIGN LANGUAGE

Students entering Washington & Lee High School in grades 9-12 may receive foreign language credit for Spanish or French if they earn a C or better. (Montross Middle School students may take Spanish 1 and it will be counted as a high school standard credit.) Other languages are available through Virtual Virginia online school. See the Virtual Virginia list of courses on pages 17 – 19.

SPANISH I (5510)

The language skills of listening, speaking, reading and writing are taught in the order in which they are listed. Self-expression is emphasized from the outset. The study of important and interesting aspects of foreign culture is also included.

SPANISH II (5520)

Prerequisite: "C" or better in Spanish I

The audio-lingual approach to the teaching of the basic language skills is continued on a more advanced level. More opportunity is provided for self-expression in the target language.

SPANISH III (5530)

Prerequisite: "C" or better in Spanish II

Basic grammar is reviewed continuously, and usage that is more complex is presented and reinforced. There is more emphasis on vocabulary development, reading comprehension, and written and oral self-expression.

SPANISH IV (5540)

Prerequisite: "C" or better in Spanish III

The primary emphasis is to strengthen the reading and writing skills. Conversational skills are practiced daily in meaningful and stimulating discussions. There is also increased emphasis placed on the study of culture as expressed through literature.

PHYSICAL EDUCATION

HEALTH AND PHYSICAL EDUCATION 9 (7300)

Required for graduation

This course provides the opportunity to improve motor skills and physical fitness. Physical activities include instruction on physical conditioning, and individual and team sports with emphasis on improving skills and game strategy. Health education includes instruction in personal and consumer health, drug and alcohol abuse, first aid, and disease prevention.

HEALTH AND PHYSICAL EDUCATION 10 (7400)

Required for graduation

Prerequisite: Health and P. E. 9. This course provides instruction in physical education as well as classroom driver education. The physical education curriculum includes fitness activities, team, and individual sports with emphasis on developing skills for use in leisure time. Classroom Driver Education focuses on the development of knowledge, attitudes, and skills necessary for safe and efficient driving.

PHYSICAL EDUCATION 11/12 (7640)

Grades 11 and 12

This course provides instruction in personal physical fitness. Activities will include daily stretching, conditioning, and weight training. Instruction in physical fitness terminology and participation in lifetime leisure activities will also be provided.

CAREER & TECHNICAL EDUCATION

The Career & Technical Education program provides students with industry based skills in Business, Marketing, Information Technology, Finance, and Computer Applications. The courses are designed to benefit students that are planning further college study, planning a combination of college and employment, or planning full-time employment immediately after high school. Selected courses offer students industry certifications, college credit, and can satisfy the Fine and Practical Arts and verified credit requirements

ACCOUNTING (6320) Grade Level: 10-12

Recommended Prerequisite: Introduction to Business Marketing

Accounting students study the basic principles, concepts, and practices of the accounting cycle for a service business and a merchandising business. Topics covered include analyzing transactions, journalizing and posting entries, preparing payroll records and financial statements, and managing cash control systems. Business ethics and professional conduct are emphasized. Students learn fundamental accounting procedures, using both manual and electronic systems.

BUSINESS MANAGEMENT (6135) Grade Level: 10-12

Recommended Prerequisite: Introduction to Business Marketing or Accounting

Students study basic management concepts and leadership styles as they explore business ownership, planning, operations, marketing, finance, economics, communications, the global marketplace, and human relations. Quality concepts, project management, problem solving, and ethical decision making are an integral part of the course. Student leadership skills may be enhanced by participation in school-based or virtual enterprises, job shadowing, internships, cooperative education, and/or the Future Business Leaders of America (FBLA). **Certifications offered:** Virtual Enterprise Certification Assessment, WISE Financial Literacy Certification Examination and Workplace Readiness Skills for the Commonwealth Examination

PRINCIPLES OF BUSINESS & MARKETING (6116) Grade Level: 10-12

Recommended Prerequisite: Introduction to Business Marketing or Accounting

Students discover the roles of business and marketing in the free enterprise system and the global economy. Students will examine basic financial concepts of banking, insurance, credit, taxation, and investments to provide a strong background for making sound decisions as consumers, wage earners, and citizen. This course also supports career-development skills and explore career options.

COMPUTER INFORMATION SYSTEMS (6612) Grade Level: 9-12

Prerequisite: None

Students apply problem-solving skills to real-life situations through word processing, spreadsheets, databases, multimedia presentations, and integrated software activities. Students work individually and in groups to explore computer concepts, operating systems, networks, telecommunications, and emerging technologies.

DESIGN, MULTIMEDIA, & WEB TECHNOLOGIES (6632) Grade Level: 10-12

Prerequisite: None

Students develop proficiency in designing and creating desktop-published projects, multimedia presentations/projects, and Websites, using industry-standard application software. Students apply principles of layout and Fin completing projects. Students create portfolios that include a résumé and a variety of desktop-published, multimedia, and Web-site projects produced in the course.

DIGITAL MARKETING (8125) Grade Level: 9-12

Recommended Prerequisite: Introduction to Marketing/Business Marketing

Students receive an introduction to marketing functions and the business plan and study Internet marketing's role in the global economy. Students gain knowledge of the tools and techniques used in Internet marketing and learn how to design a Website. They explore ethical, legal, and security aspects and prepare for a career in Internet marketing. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

ECONOMY AND PERSONAL FINANCE Grade Level: 11-12

(Dual Enrollment may be available.)

Students learn how economies and markets operate and how the United States economy is interconnected with the global economy. Additionally they learn how to navigate the financial decisions they must face and make informed decisions relating to career exploration, budgeting, banking, credit, insurance, spending, financing postsecondary education, taxes, saving and investing, buying/leasing a vehicle, and living independently. They also learn the importance of investing in themselves in order to gain the knowledge and skills valued in the marketplace. Development of financial literacy skills and an understanding of economic principles will provide the basis for responsible citizenship, more effective participation in the workforce, and career success. The course incorporates all economics and financial literacy objectives included in the Code of Virginia.

EMERGENCY MEDICAL TECHNICIAN I Grade Level 10-12 (Must be at 16 years old prior to the start of the course.)

The tasks for this course represent the National and Virginia Emergency Medical Services (EMS) Educational Standards. Students explore and apply the fundamentals of EMS, anatomy, physiology, and medical terminology while demonstrating skills in assessing and managing patient care, including assessing the scene and understanding shock, resuscitation, and trauma. Successful completion of this course and instructor endorsement qualifies students to enroll in EMT II to complete the program sequence. Students must complete a minimum of 85 percent of the didactic and lab aspects of the course, per 12VAC5-31-1501 in the Code of Virginia. Successful completion of all course requirements and instructor endorsement may lead to eligibility to take the Virginia State Psychomotor Exam and the National Registry of Emergency Medical Technicians (NREMT) cognitive exam. Students must meet the requirements of the Functional Position Description for the Basic Life Support Provider (refer to EMS.TR.14B and 12VAC5-31-1501 in the Code of Virginia).

ENTREPRENEURSHIP Grade Level: 11-12 (Dual Enrollment)

Corequisite: Introduction to Business

Students will be presented with the various steps considered necessary when going into business. Includes areas such as product-service analysis, market research evaluation, setting up books, ways to finance startup, operations of the business, development of business plans, buyouts versus starting from scratch, and franchising. Uses problems and cases to demonstrate implementation of these techniques.

INTRODUCTION TO BUSINESS Grade Level: 11-12 (Dual Enrollment)

Corequisite: Entrepreneurship

Students receive a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organization, production, human resource management, marketing, finance, and risk management. Students will also develop business vocabulary.

INTRODUCTION TO CULINARY ARTS (8250) Grade Level: 9 -12

The Introduction to Culinary Arts curriculum provides students with opportunities to explore career options and entrepreneurial opportunities within the food service industry. Students investigate food safety and sanitation, explore culinary preparation foundations, practice basic culinary skills, explore diverse cuisines and service styles, investigate nutrition and menu development, and examine the economics of food. The curriculum places a strong emphasis on science and mathematics knowledge and skills

CULINARY I (8275) Grade Level: 10 -12

Prerequisite: Introduction to Culinary Arts (8250)

The Culinary Arts I curriculum provides students with the foundations for a comprehensive knowledge of the food service industry and with opportunities to build technical skills. Students examine and practice basic rules and procedures related to kitchen and food safety, kitchen sanitation procedures, and emergency measures. Students explore the purchasing and receiving of goods and study fundamental nutritional principles and guidelines. As they explore food-preparation techniques, students practice applying these techniques to the preparation and serving of basic food products. The curriculum places a strong emphasis on science and mathematics knowledge and skills.

Recommended prerequisite(s): Introduction to Culinary Arts (8249)

CULINARY II (8276) Grade Level: 10 -12

Prerequisite: Culinary I (8275)

The Culinary Arts II curriculum provides students with continuing opportunities to acquire a comprehensive knowledge of the food service industry as well as to expand their technical skills. Students practice kitchen safety and sanitation, apply nutritional principles to food preparation and storage, perform a wide range of more advanced food-preparation techniques including garde manger and baking, refine their dining room serving skills, develop menus, perform on-site and off-site catered functions, and strengthen their business and math skills. The curriculum continues to place a strong emphasis on science and mathematics knowledge and skills

INTRODUCTION TO LEADERSHIP (9091) Grade Level: 9 & 10

Prerequisite: None

This course equips students with individual and group leadership skills. Course content includes leadership principles, officer training, parliamentary law, public speaking, effective communication, positive public relations skills, and techniques of organizing and conducting group meetings and activities. Students are encouraged to be active members of a community or school organization.

INTRODUCTION TO MARKETING (8110) Grade Level: 9 & 10

Prerequisite: None

Students gain an understanding of the importance of marketing in today's society. They develop skills related to interpersonal communication, self-presentation, economics, marketing, sales, employability, career discovery, and ethical decision-making. This course reinforces mathematics, science, English, and history/social science Standards of Learning (SOL). Computer/technology applications and DECA activities support this course. DECA, the co-curricular student organization, offers opportunities in leadership, community, and competitive events.

MARKETING/MARKETING CO-OP (8120) Grade Level: 11 & 12

Recommended Prerequisite: Introduction to Marketing/Business Marketing

Students examine activities in marketing and business important for success in marketing employment and postsecondary education. Students will learn how products are developed, branded, and sold to businesses and consumers. Students will analyze industry trends and gain hands-on experience in the marketing of goods, services, and ideas. Topics will include professionalism in the workplace, product planning and positioning, promotion, pricing, selling, economic issues, and the impact of technology on the marketplace. This course reinforces mathematics, science, English, and history/social science Standards of Learning (SOL). Computer/technology applications and DECA activities enhance the course. DECA, the co-curricular student organization, offers opportunities in leadership, community, and competitive events.

NUTRITION & WELLNESS (8229) Grade Level: 9-12

Prerequisite: None

Students enrolled in Nutrition and Wellness focus on understanding wellness, investigating principles of nutrition, using science and technology in food management, ensuring food safety, planning menus and preparing food, and exploring careers in the field of nutrition and wellness. Critical thinking and practical problem solving are emphasized.

SPORTS & ENTERTAINMENT MARKETING (8175) Grade Level: 10-12

Recommended Prerequisite: Introduction to Marketing/Business Marketing

This introductory course helps students develop a thorough understanding of fundamental marketing concepts and theories as they relate to the sports and entertainment industries. Students will investigate the components of customer service skills, branding, product development, pricing and distribution strategies, business structures, sales processes, social media, sponsorships and endorsements, as well as promotion plans needed for sports and entertainment events. The course also supports career development skills and explores career options. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course.

TECHNOLOGY FOUNDATIONS (8403) Grade level: 9-12

Prerequisites: None

In this beginning high school course, students acquire a foundation in technological material, energy, and information and apply processes associated with the technological thinker. Challenged by laboratory activities, students create new ideas and innovations, build systems, and analyze technological products to learn further how and why technology works. They work in groups to build and control systems using engineering design in the development of a technology.

INDUSTRIAL ROBOTICS TECHNOLOGY (8558) Grade level: 10-12

Prerequisites: None

This course provides instruction in programming robots used in assembly and manufacturing settings. Students will work with various power systems while acquiring machining, welding, and system engineering skills. This course leads to industry certification options, including the general industry OSHA 10 card, to further validate their mastery of related skills.

TECHNOLOGY OF ROBOTIC DESIGN (8421) Grade Level: 10-12

Prerequisites: Industrial Robotics Technology

Students engage in the study of computers and microprocessors and their applications to manufacturing, transportation, and communication systems. Topics include computer equipment and operating systems, robotics, programming, control systems, and social/cultural impact of these technologies. Problem-solving activities challenge students to design, program, and interface devices with computer systems. Learning activities include robotics, computer-aided design, computer-aided manufacturing and design, and control of electromechanical devices.

STEM Courses for Northern Neck Technical Center

INTRODUCTION TO ENGINEERING DESIGN (PLTW) (8439) Grade Level 9-12

Prerequisite: None

In this foundation course in Project Lead the Way (PLTW), students use 3-D computer modeling software as they learn the engineering-design process and solve design problems for which they develop, analyze, and create product models.

PRINCIPLES OF ENGINEERING (PLTW) (8441) Grade Level 9-12

Prerequisite: Introduction to Engineering Design

In this foundation course in the Project Lead the Way (PLTW), students explore the engineering profession and the fundamental aspects of engineering problem solving. Students study the historical and current impacts of engineering on society, including ethical implications. Mathematical and scientific concepts will be applied to fundamental engineering topics, including mechanics and electrical-circuit theory.

NOTE: Not all courses in these pathways will be offered during the 2018-2019 school year. We will focus more on the first two courses in the sequence as students need foundational courses in order to be ready for the later courses in the pathways.

FINE ARTS

The Fine Arts program at W & L is designed to provide students with the opportunity to participate in a sequential course of study in the disciplines of music, visual arts, and theater arts. Generalized experiences as well as highly advanced and specialized opportunities are available in all arts areas. Students are provided training in the technical skills necessary to

develop their individual capacities to construct and experience the creative process. A credit earned in any of these courses fulfills the Fine/Practical Arts requirements.

MUSIC

ADVANCED BAND (9234)

Once school begins, there are multiple rehearsals after school for the marching band. The band will participate at football games, parades, and various band competitions. After marching season ends, concert band will commence. Concert band includes the study of music theory, history, and a varied repertoire chosen by the director. Grading is done mostly by participation, but will also include theory work, essays, and written tests on music terms. There will be multiple opportunities throughout the school year for participation in other ensembles such as pep band, jazz band, and various honors bands. This class is designed to attend to all of the national standards for music education.

CHORUS (9289)

Chorus is a beginning/intermediate level course for those students who would like to learn the fundamentals of sight-singing, music literacy, and group choral performance. **Chorus is not only a class, but an extra-curricular performance program.** Students can expect to learn music notation, Kodaly-based sight-singing with solfege, vocal health and maintenance, healthy and productive vocal singing technique, and the essential elements of choral ensemble singing. Students will perform a variety of repertoire and choral styles in school concerts throughout the school year, as well audition opportunities for District 15 Chorus and NN/MP Area Chorus in the spring. Through public performance, the students will demonstrate their knowledge of choral and solo singing technique. Students will be assessed on effort and participation, singing tests, concert preparation, in-class activities, and written assessments. This class is designed to attend to all of the national standards for music education.

GUITAR (9245)

Guitar is a beginning/intermediate level course for those who would like to learn how to play the instrument and learn how to read music. Students can expect to learn how to read music notation, parts of the guitar, tuning, and will study music theory and composition as well. Students will also learn how to play different genres of music through exercises and repertoire from a method book. Students will be assessed by their individual growth, written tests, playing assessments, participation, and a two group projects: a pop song project and a composition project, the latter being their final exam grade. This class is designed to attend to all of the national standards for music education.

AMERICAN POPULAR MUSIC (9299)

Students are presented with the historical development of American popular music that begins with the nineteenth century and continues through the end of the twentieth century. Students study, discuss and listen to various styles including Ragtime, Blues, Jazz, Musical Theater, Rhythm and Blues, Country, Folk, Rock and Roll, the British Invasion, and Today's Sounds. In addition to American popular music, students will explore music from different countries and the styles that have been made popular in those countries.

ART

ART I / ART APPRECIATION (9120)

This course will focus on the experience of art. It will take the student through a general overview of the art world. We will focus on understanding Art as a visual language throughout time and across cultures. The later part of the course will touch on drawing, color theory and general design.

ART II/INTERMEDIATE 9130)

Prerequisite: Art I

This second level course will focus on the mastery of drawing and design skills. Through a range of experiences, the student artist will gain knowledge of a variety of mediums in which to work.

ART III/ADVANCED INTERMEDIATE (9140)

Prerequisite: Art II

This is a studio course specifically geared towards students interested in attending an Art school or study Art in college. The assignments given will be more on a college level designed to round out the student artist's portfolio. This class will fine-tune the student's artistic skill along with the development of independent thinking processes and artistic self-discovery.

ART IV (9145)

Prerequisite: Art I & Art II

This class is designed for the serious art student. The course is an intensive one designed for juniors and seniors who may wish to attend art school and need to compile a portfolio. All areas of Studio Art will be covered in depth, with emphasis on

painting, sculpture, drawing, ceramics, textile design and photography.

ART V/PORTFOLIO PREPARATION (9147)

Limited seats.

GOVERNOR'S SCHOOL COURSES

Students selected to attend CBGS must complete the VPT (Virginia Placement Test.) In order to receive dual enrollment credit for CBGS courses, the student must meet the scoring guidelines for the VPT set forth by the Virginia Community College System (VCCS) and Rappahannock Community College (RCC).

BIOLOGY RCC BIO 101/102 4 credits/semester (total 8 credits)

The biology course taught to the Chesapeake Bay Governor's School sophomores will focus on those major concepts or themes deemed to be essential to an understanding of life processes. Throughout the year, science as a process will be emphasized as students conduct laboratory studies to support classroom information, use inductive reasoning to discover key concepts, study the history of the development of our present understanding of biological concepts, and learn how to conduct their own research. Other major themes to be emphasized are genetics, evolution, energy transfer, the relationship between structure and function, ecological interrelationships, the regulation of processes at many levels, and the impact of science and technology on our society. These concepts are all encompassing as well as recurring in all topics that will be covered throughout the year. This course, in conjunction with the topics course, will adequately prepare our students to succeed in their next two years at CBGS, in college, and in their future endeavors, as they will learn to focus their efforts and master essential study skills. CBGS Biology students will also be able to succeed on the Virginia Standards of Learning End of Course Biology Exam.

CHEMISTRY RCC 111/112 4 credits/semester (total 8 credits)

Students taking Chemistry at the Governor's School will come from a variety of high school backgrounds. Although no prior chemistry is necessary and all of the Virginia Standards of Learning for the basic high school chemistry curriculum are covered, the college level of this course requires that students process information at a faster pace and cover the principles in much greater depth. This course explores the fundamental laws, theories, and mathematical concepts of chemistry and will cover the structure of matter, the characteristics of the states of matter, types of reactions, thermodynamics, chemical kinetics, equilibrium, and electrochemistry. The lab component of the course, which counts approximately twenty percent of the overall grade, will focus on qualitative and quantitative support of the general chemistry concepts.

PHYSICS RCC PHYS 201/202 4 credits/semester (total 8 credits)

This is a 2 semester, college level, laboratory Physics course taught in the senior year, covering fundamental Physics principles, and their qualitative and quantitative applications. Topics include: mechanics; harmonic and wave motion; sound; optics; electromagnetism; thermodynamics; nature of matter; nuclear and quantum physics and relativity. Additional topics may be pursued depending upon time and interest. In addition to qualitative and quantitative understanding of topics, students will be required to use them for problem solving in laboratory applications. Strong mathematical skills are essential, particularly in Algebra and Trigonometry. In addition to strong math skills, the ability to handle independent reading and study is crucial. Pre-Calculus is a pre-requisite for this course. Calculus is a co-requisite, taken during this year, and may help with quantitative conceptualization.

COLLEGE ALGEBRA RCC MTH 158 1 semester (total 3 credits)

This course covers the structure of complex number systems, polynomials, rational expressions, graphing, systems of equations and inequalities and functions, quadratic and rational equations and inequalities. The course is designed for sophomores. Students will typically take College Algebra in the fall semester of their sophomore year and MTH 163 Pre-Calculus in the spring semester.

PRE-CALCULUS I RCC MTH 163 1 semester (total 3 credits)

This Pre-Calculus I course is taught during the spring semester of the sophomore year after taking College Algebra (MTH 158) in the fall semester. The course presumes a mastery of the material covered in MTH 115/116 (or its equivalent). During the course, students will discuss polynomial and rational functions; exponential and logarithmic functions; systems of equations, inequalities, and linear programming; matrices and determinants; and conic sections with analytic geometry.

PRE-CALCULUS II RCC MTH 164 1 semester (total 3 credits)

This course will focus heavily on trigonometry, combining skills from both Geometry and Algebra. Topics will include evaluating trigonometric expressions (using both right triangle trigonometry and the unit circle), graphs of trigonometric functions, trigonometric identities, polar and parametric equations, and mathematical induction. Students will typically take Pre-Calculus II in their junior year.

STATISTICS RCC MTH 240 1 semester (total 3 credits)

The Statistic course, typically taken in the junior year, will cover one semester and will present an overview of statistics, including descriptive statistics, elementary probability, probability distributions, estimation, hypothesis testing, and correlation and regression. Students will apply statistical methods to their two-year research paper.

CALCULUS with ANALYTIC GEOMETRY I RCC MTH 173 2 Semesters (total 5 credits)

This yearlong course presents analytic geometry and the calculus of algebraic and transcendental functions including the study of limits, derivatives, differentials, and introduction to integration along with their applications. Designed for mathematical, physical and engineering science programs. Most CBGS students will take MTH 173 in their senior year.

STATISTICS I RCC MTH 241 1 semester (total 3 credits)

This course covers descriptive statistics, elementary probability, probability distributions, estimation, and hypothesis testing. Statistics I provides the student with the necessary abilities in statistics and probability to understand the results of statistical studies and to perform descriptive and basic inferential statistical studies within their areas of interest.

STATISTICS II RCC MTH 242 1 semester (total 3 credits)

This course continues the study of estimation and hypothesis testing with emphasis on correlation and regression, analysis of variance, chi-square tests, and non-parametric methods. Statistics I provides the student with the necessary abilities in statistics and probability to understand the results of statistical studies and to perform descriptive and basic inferential statistical studies within their areas of interest

APPLIED CALCULUS RCC MTH 270 (total 3 credits)

This course introduces limits, continuity, differentiation and integration of algebraic and transcendental functions, techniques of integration, and partial differentiation. This course prepares students for the application of calculus in a variety of fields.

FOUNDATIONS IN SCIENCE RCC SCT 111/112 8 credits

This course introduces the basic sciences which describe our physical environment, including the fundamentals of geology, meteorology, physics, chemistry, and biology. Students will explore scientific principles through data acquisition and analysis with a focus on the Chesapeake Bay Watershed and human impacts on the environment.

OUTDOOR ADVENTURES RCC PED 183 2 credits

Outdoor Adventures introduces outdoor activities with an emphasis on basic skills, preparation, personal and group safety, equipment selection and use. Over the three years at CBGS students will explore the ecology of the Chesapeake Bay watershed while camping, kayaking, and hiking on three overnight trips and several day trips. In addition, students will be required to keep a journal of their field experiences. Students must attend all 3 major field trips.

MARINE & ENVIRONMENTAL SCIENCE I & II RCC MAR 201-202 & 101-102 4 credits/semester (total 16 credits)

A two-year lab and field science course for juniors & seniors designed to provide thematic unity to the CBGS program and immerse students in rich experiential learning. Students will explore the principles of general ecology, evolutionary biology, environmental science, and oceanography, with special emphasis on the natural history and ecology of the Chesapeake Bay and its watershed as well as the Atlantic Ocean and east coast. The entire two-year course is interdisciplinary in spirit, stressing the importance of chemical, physical, and geological oceanography for understanding marine life and aquatic ecosystems, while making frequent connections to the mathematics and general sciences that students are learning in other CBGS courses. The curriculum will largely be driven by the data and investigations of real scientists, and students will design and conduct their own scientific research. In order to provoke critical thinking and creativity, the course will be organized around a set of abstract unifying concepts, vivid discovery experiences that require students to interpret their own careful observations, extended problem-solving missions, independent projects and presentations, and thorny environmental issues that compel thoughtful evaluation. A two-year research project will be required of all Chesapeake Bay Governor's School students R

Northern Neck Technical Center Governor's STEM Academy for Agriculture & Maritime Studies

GENERAL INFORMATION: Students must **apply** to the Technical Center. Applications are available in the Guidance Department.

ATTENDANCE: Students attend the vocational center three periods a day:

Mornings - 9:00 a.m. to 11:30 a.m.

Afternoons - 12:00 noon to 2:30 p.m.

Students travel and eat lunch during third period.

CREDITS: Students earn three credits for successful completion of each 3-hour course.

TRANSPORTATION: Students attending the Northern Neck Technical Center will be required to ride the bus to and from Washington and Lee High School. Students are not permitted to drive.

Mission Statement of the Northern Neck Technical Center

The mission of the Northern Neck Technical Center is to provide a comprehensive, technical education to the students from the counties of Lancaster, Northumberland, Richmond, Westmoreland, Essex, and the town of Colonial Beach.

About the Technical Center

Creating an educated society is an important function of the school system of the Northern Neck. The need to equip young people with the skills that would allow them to go immediately into the work world upon graduation was recognized by the Northern Neck school divisions. Because school populations were too small to support fully-developed technical programs within each system, a decision was made to pool resources of the five school divisions and create a regional center.

From the five high schools within the Northern Neck, students are given the opportunity to pursue additional technical studies at the Northern Neck Technical Center in Warsaw. They come to the center from Lancaster High School, Northumberland High School, Rappahannock High School, Washington and Lee High School, Essex High School, and Colonial Beach High School. In addition, some students from the intermediate schools of these divisions also attend the Technical Center.

The Rappahannock Community College offers two years of college level work in the arts and sciences, regularly scheduled technical subjects at the post-secondary level, plus special training course which can be developed for the individual industries in the area.

The center provides educational opportunities in the health occupations and in trade and industrial education. Each program uses competency based instruction and curriculum. The student lab contract implements the competency- based programs. It contains job hierarchies, descriptions, instructional units composed of related competencies and performance objectives.

The Governor's STEM Academy for Agriculture and Maritime Studies, "The Academy", will expand opportunities for the secondary school population of the Northern Neck to prepare for careers in the vital, high wage, high-skill Agricultural and Maritime industries local to our region. The major goal of the Academy will be to ensure that students graduate with college-and-career-readiness knowledge and skills. Another goal will be to have all K-12 students on the Northern Neck exposed to higher mathematics and science to prepare them for possible participation in the Academy.

Project Lead the Way (PLTW) is the leading provider of rigorous and innovative Science, Technology, Engineering, and Mathematics (STEM) education curricular programs used in middle and high schools across the US.'s high-tech, high-skill global economy. For American to remain economically competitive, our next generation of leaders – the students of today – must develop the critical-reasoning and problem-solving skills that will help make them the most productive in the world. STEM education programs like the one offered by the PLTW engage students I activities-, projects-, and problem-based (APPB) learning, which provides hands-on classroom experiences. Students create, design, build, discover, collaborate and solve problems while applying what they learn in math and science.

The Academy will concentrate on three career pathways: Engineering and Technology, Plant Systems and Facility and Mobile Equipment Maintenance (Maritime).

COURSES OFFERED AT THE NORTHERN NECK TECHNICAL CENTER

AUTO BODY TECHNOLOGY I & II

Prerequisites: Grade Level 11-12; 16 years old on or by December 1 of the current school year and be able to wear a respirator. Three credits for I and three credit for II.

The Collision Repair Technology courses are designed to give training in automobile body repair; body construction; all types of collision repair, including frame and wheel alignment; body panel repair and replacement; acetylene welding; brazing; spot repairing and estimating. Repair persons must be able to correctly analyze all types of body damage and restore vehicles to their original appearances. Gain hands-on experience with welding, plastic fillers, and refinishing equipment and processes.

This is a two-year program, but students may return for a third year through special arrangements. Students with respiratory problems should not take this course.

AUTOMOTIVE TECHNOLOGY I & II

Prerequisites: Grade Level 11-12; 16 years old on or by December 1st of the current school year and have the ability to read at the 10th grade level. Three credits for I and three credit for II.

The Automotive Technology program is designed to provide a thorough knowledge of the mechanics of the modern automobile and all its supporting systems, to develop an individual's mechanical skill and his/her interest in automotive repair and service career. The curriculum is designed primarily for persons who seek full-time employment in the automotive maintenance and general repair field immediately upon completion of the two-year program. The course will develop the student's skills in the use of the most modern automotive repair tools and equipment. For one to advance successfully in this program of study, a thorough understanding of the automobile and its basic operating principles, a mechanical aptitude and manual dexterity are required. Learn maintenance and diagnostic procedures. Take the NATEF with N3SA Certification ASE test. BG service approved training. Students receive Commonwealth of Virginia Safety Inspection License Training.

This is a two-year program, but students may return for a third year through special arrangements.

CARPENTRY I & II

Prerequisites: Grade Level 11-12; 16 years old on or by December 1st of the current school year and have the ability to read at the 10th grade level. Three credits for I and three credit for II.

Carpentry I is an introductory class in carpentry, designed to give an overview of the various components of residential construction and building techniques used throughout the country. The course is intended for students who are interested in the many rewarding careers in the construction industry. These students should possess characteristics such as dedication to hard work, pride in a job-well-done, an overall good work ethic and also the ability to be productive alone and also while working with others toward a common goal. It is also mandatory that the students possess good math skills.

Carpentry II is a follows up to the first year of Carpentry with an emphasis on more of the technical aspects of the carpentry profession with training in stair layout, roof framing and other more specific skill sets. The course is intended for students who are interested in the many rewarding careers in the construction industry. These students should possess characteristics such as dedication to hard work, pride in a job well-done, an overall good work ethic and also the ability to be productive alone and also while working with others toward a common goal. It is also mandatory that the students possess good math skills. Explore careers in residential and commercial carpentry including cost and materials estimating and remodeling while learning comprehensive carpentry skills.

COMPUTER SYSTEMS TECHNOLOGY I & II

Prerequisite: Grade Level 11-12; Pre-Algebra or Algebra and 16 years old on or by December 1 of the current school year. Three credits for I and three credit for II.

This course is designed to teach basic computer repair, troubleshooting and maintenance technology, as well as prepare

the individual for industry certification and customer interaction.

COSMETOLOGY

Prerequisites: Grade Level 11-12; No respiratory problems and 16 years old on or by December 1 of the current school year. Student fee: \$250. Attendance is required. Three credits for I and three credit for II.

The Cosmetology course is a two year trade and industrial course for students in grades 11 & 12 and Post Graduates. This curriculum has been designed in compliance with the rules of the Virginia State Board of licensing and regulations and Public Secondary Programs for High School Students. The intent of the program is to provide the student with the required hours and skills necessary for the student to pass the Virginia Cosmetology State Board Exam. This program will also provide students with a better understanding of the knowledge, skills and training needed to succeed in the Cosmetology profession.

THIS COURSE IS RESTRICTED TO ELEVENTH AND TWELFTH GRADERS WHO SHOULD BE READY TO TAKE THE STATE BOARD EXAMINATION JUST BEFORE GRADUATION FROM HIGH SCHOOL. STUDENTS ARE REQUIRED TO TAKE THE EXAM.

CULINARY ARTS I & II

Prerequisite: Grade Level 11-12; No allergic reactions to handling various foods and 16 years old on or by December 1 of the current school year. Three credits for I and three credit for II. (Dual Enrollment: HRI 120: 4 credits, HRI 158: 3 credits, HRI 134: 3 credits)

The Culinary Arts courses are designed to prepare students for entering employment in food service occupations. The training program is particularly valuable because a major portion of the student's skill is acquired through actual cooking, study in the use and care of equipment, food standards and/or proper sanitation procedures, including public health aspects of food handling. It is a two-year program. Students may take a third year with emphasis on catering. Learn the art and science of culinary preparation from a certified executive chef and gain hands-on experience in the restaurant business. This program is accredited by the American Culinary Federation.

ELECTRICITY I & II

Prerequisite: Grade Level 11-12; 16 years old on or by December 1 of the current school year. Three credits for I and three credit for II.

Electricity 1 is an introduction to the electrical industry and prepares students for the construction workforce as well as giving practical experience to those going onto college pursuing an engineering degree. This program opens many doors of opportunity for the student who applies himself. Students are taught basic fundamentals used in real world situations. Students hone their skills using hands on experience through the use of materials, tools and equipment. Students may have the opportunity to visit and work at actual job sites. The new technology available to all students at the Northern Neck Technical Center will be used on a daily basis.

Electricity II continues with curriculum preparing students for the electrical industry. Students' work building their 1st year schematics and ladder diagrams preparing them for more commercial and industrial work with motors, starters, and various controls and controllers. Students will complete NCCER Electricity Level 2 apprenticeship curriculum. Students will complete a resume for future employment opportunities.

NURSING AIDE PROGRAM

Prerequisite: Grade Level 11-12; No criminal record and by 16 years old on or by December 1st of the current school year. Student fee: \$140. Three credits. One year program. (Dual Enrollment: NUR 27: 3 credits, NUR 29: 3 credits, NUR 31: 3 credits)

This is a college level course with Dual Enrollment at Rappahannock Community College. Nursing Assistant is a one-year program designed to help a student learn basic knowledge and develop skills necessary to become a nursing aide. In health care facilities, this work generally consists of bathing patients, tracking, recording vital signs, and other duties that enable nurses to devote more time to work requiring professional and technical training.

This program consists of theory and practice in the classroom setting and clinical experience in the local nursing homes and hospitals. At the completion of this program, students will be eligible to take the State Board of Nurse's Aide Examination. This examination consists of both a written and manual test. Successful completion allows the student to be place on the State Registry for Certified Nurse's Aides. This course provides clinical experience in long-term care settings and is an excellent introduction to basic nursing skills. Learn anatomy, physiology, nutrition, and geriatrics.

The Governor's STEM Academy for Agriculture and Maritime Studies

The Governor’s STEM Academy for Agriculture and Maritime Studies, “The Academy”, will expand opportunities for the secondary school population of the Northern Neck to prepare for careers in the vital, high wage, high-skill Agricultural and Maritime industries local to our region. The major goal of the Academy will be to ensure that students graduate with college-and-career-readiness knowledge and skills. Another goal will be to have all K-12 students on the Northern Neck exposed to higher mathematics and science to prepare them for possible participation in the Academy.

The Academy will concentrate on three career pathways: Engineering and Technology, Plant Systems and Facility and Mobile Equipment Maintenance (Maritime).

The Engineering and Technology career pathway will fill jobs in the growing architecture and engineering occupational fields. In fact, civil engineering jobs on the Northern Neck are predicted to experience growth of 33.44 percent by 2018.

The Facility and Mobile Equipment Maintenance (Maritime) career pathway is integral to the Northern Neck because of the multitude of crafts that navigate the area’s extensive waterways for business and pleasure. The estimated number of employment opportunities in this field will be near 13,000 by 2018.

The third, career pathway will provide the educational training in the Plant Systems which will contribute to the regional economic growth on the Northern Neck through the rebirth of traditional agricultural career opportunities in combination with twenty-first-century careers.

ENGINEERING AND TECHNOLOGY

Introduction to Engineering (8439) First Year at W & L Dual Enrollment

Prerequisite: MTE 1-5 and ENF2 Placement in VPT.

A foundation course in Project Lead the Way (PLTW), in which students use a 3-D computer modeling software as they learn the engineering-design process and solve design problems for which they develop, analyze, and create product models. *This course is taught at the local high schools.*

Principles of Engineering (8441) Second year at W & L – 1 high school credit and Dual Enrollment (EGR 120: 2 college credits)

Prerequisite: MTE 1-5 and ENF2 Placement in VPT.

Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer and operating systems. Includes engineering problem solving techniques using computer software. *This course is taught at the local high schools.*

Civil Engineering and Architecture (8430) Third Year – first semester at NNTC Dual Enrollment (1 credit)

Prerequisite: MTE 1-5 and ENF2 Placement in VPT.

Students learn the fundamentals of building design, site design, and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3D architectural design software.

Engineering Design and Development (8443) Third year – second semester at NNTC Dual Enrollment (1 credit)

Prerequisite: MTE 1-5 and ENF2 Placement in VPT.

Introduces the fundamental knowledge and experience needed to understand the engineering design process through the basics of electrical, computer, and mechanical systems. Includes the completion of a project in which a specific electromechanical robot kit will be analyzed, assembled, and operated.

Introduction to Robotics Fourth Year – (2 credits)

Prerequisite: MTE 1-5 and ENF2 Placement in VPT.

Students learn the evolution and history of robotics with an emphasis on automated and flexible manufacturing. Presents the advantages and limitations of the present robot systems. Students learn to design, document, and program both real and virtual robotic systems using VEX components and RobotC Virtual Worlds software. Open and closed loop machine control – using various motors and sensors for manufacturing systems is covered.

AGRICULTURE, FOOD AND NATURAL RESOURCES (AFNR)

Horticulture (8034) First semester

In this course, students develop the necessary knowledge, skills, habits, and attitudes for entry-level employment and advancement in areas such as floriculture, landscape design, greenhouse operation, nursery plant production, and turf management. They receive instruction in using soil and other plant-growing media and in identifying, propagating, and growing horticultural plants in the greenhouse and land laboratory. Instruction is provided in safety practices and leadership development.

Greenhouse Management (8035) Second Semester

Landscaping I (8036) First semester

The landscaping program teaches students how to design and construct landscapes, identify landscape plants, and to allow students the opportunity to learn about the landscaping industry. Students will study turf management practices along with working on and community projects.

Landscaping II (8039) Second semester

This is a continuation of first semester.

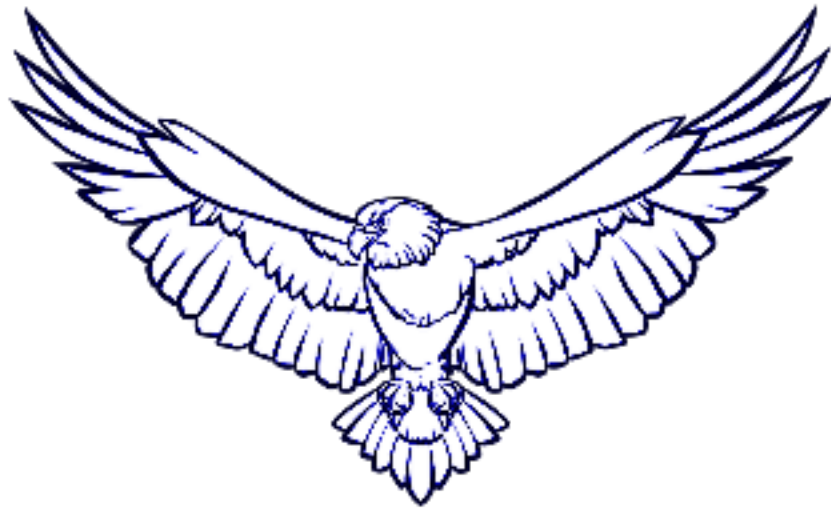
TRANSPORTATION, DISTRIBUTION AND LOGISTICS

Marine Service Technology I (8750)

In this introduction to the maritime industry, students will learn a broad range of skills required for work in a marine trades occupation. They will become well educated on the opportunities available to them, and will understand the importance of the industry as a whole. Students will gain entry-level marine trade skills in areas including basic seamanship, shop and boating safety, inboard and outboard systems, gasoline and diesel engine theory, carpentry, fiberglass construction and repair, electricity, welding, vessel storage/handling, and tool and equipment operation. The course is based on the National Marine Trades Curriculum, developed by the American Boat and Yacht Council (ABYC). Successful completers will receive a certificate from the ABYC through Skills USA.

Marine Service Technology II (8751)

The Marine Trades program is a two-year program. This program is designed to offer students hands-on operation of boats, motors and trailers and to teach the practical application in Marine Technology. Students enrolled in these classes will become trained mechanics with technical reading and analytical thinking skills making them highly skilled technicians.



*Washington & Lee High
School
Where Eagles Soar!*