LOUDOUN COUNTY PUBLIC SCHOOLS

PROGRAM OF STUDIES

EMPOWERING ALL STUDENTS TO MAKE MEANINGFUL CONTRIBUTIONS TO THE WORLD

2020 - 2021

FOR SECONDARY STUDENTS

LOUDOUN COUNTY PUBLIC SCHOOLS

OFFICE OF THE SUPERINTENDENT

21000 Education Court
Ashburn, Virginia 20148
(571) 252-1020

Eric Williams, Ed.D.
Superintendent

January 2020

Dear Students and Parents/Guardians:

The Loudoun County Public Schools (LCPS) *Program of Studies* contains important information to help you understand the opportunities available for your middle and/or high school student. LCPS offers a wide variety of academic, elective and programmatic courses that meet the needs of all learners.

Developing a comprehensive academic and career plan is best accomplished through collaboration between students, parents, school counselors, teachers, and principals. A well-developed plan will ensure that graduation requirements are met on time and that academic and personal growth are supported in preparation for post-secondary options such as college, vocational training, military service, or employment.

The Program of Studies is an excellent reference to help your student navigate their journey as a learner in LCPS. Please take time to review the information presented in this booklet as it includes specific information about course descriptions, grades, academic and career planning, Virginia Standards of Learning testing information, graduation requirements as set forth by the Virginia Department of Education, athletic and VHSL participation, diploma requirements, occupational and career clusters, senior class rank, and much more.

With best wishes for a successful school year, I am

Very truly yours,

Eric Williams, Ed.D.
Superintendent

ACKNOWLEDGEMENTS

Secondary Schools and Educational Centers

Belmont Ridge Middle School, Leesburg, VA

Blue Ridge Middle School, Purcellville, VA

Brambleton Middle School, Ashburn, VA

Eagle Ridge Middle School, Ashburn, VA

Farmwell Station Middle School, Ashburn, VA

Harmony Middle School, Hamilton, VA

Harper Park Middle School, Leesburg, VA

J. Michael Lunsford Middle School, Chantilly, VA

Mercer Middle School, Aldie, VA

River Bend Middle School, Sterling, VA

Seneca Ridge Middle School, Sterling, VA

J.L. Simpson Middle School, Leesburg, VA

Smart's Mill Middle School, Leesburg, VA

Sterling Middle School, Sterling, VA

Stone Hill Middle School, Ashburn, VA

Trailside Middle School, Ashburn, VA

Willard Intermediate School, Aldie, VA

Briar Woods High School, Ashburn, VA

Broad Run High School, Ashburn, VA

John Champe High School, Aldie, VA

Dominion High School, Sterling, VA

Freedom High School, South Riding, VA

Heritage High School, Leesburg, VA

Independence High School, Ashburn, VA

Lightridge High School, Aldie, VA

Loudoun County High School, Leesburg, VA

Loudoun Valley High School, Purcellville, VA

Park View High School, Sterling, VA

Potomac Falls High School, Potomac Falls, VA

Riverside High School, Leesburg, VA

Rock Ridge High School, Ashburn, VA

Stone Bridge High School, Ashburn, VA

Tuscarora High School, Leesburg, VA

Woodgrove High School, Purcellville, VA

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Academies of Loudoun, Leesburg, VA

Douglass School, Leesburg, VA

Thomas Jefferson High School, Alexandria, VA

Virtual Loudoun

For specific information about a school or educational center, please visit
www.lcps.org and click *Schools*

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Students New to Loudoun County Public Schools

Parents of students new to Loudoun County Public Schools should visit https://www.lcps.org/site/Default.aspx?PageID=1012 for registration information, forms, and documentation needed to register their student.

Purpose of the Program of Studies

This educational planning guide is designed to help students and their parents:

- ✓ Learn about courses and programs offered in the middle and high schools of Loudoun County Public Schools
- ✓ Make informed choices about courses
- ✓ Understand and prepare for Virginia's graduation requirements, and assist students in planning and refining their academic and career plans (ACP) to meet educational and career goals

Students should study this guide and consult with their parents, school counselors, and teachers in planning their individual plans.

General Information

It is the responsibility of each student and parent that requirements for an Applied Studies, Standard, or Advanced Studies Diploma are met. Beginning in seventh grade, school counselors review graduation requirements with students annually, and the school counseling staff at each school is available to assist students and parents. Parents should work closely with their student's school counselor in making the best academic decisions for their student. To determine graduation requirements, students and parents must consider both the desired diploma option and the year the student first enters(ed) ninth grade.

How Can I Prepare?

All high school graduates can expect to work, earn a living, and build a career. To do this successfully requires planning and selecting a career goal that is right for the student. Students need to set personal goals that will give focus on their high school years. These goals should be outlined in an academic and career plan developed with the assistance of a school counselor and the parents. The student's academic and career plan provides a strategy for accomplishing goals. Students should consider the following as they develop their plan and select courses:

- ✓ Student's abilities, interests, values, strengths, likes, and dislikes
- ✓ Curriculum in the career area of the student's choice, including work-related options
- ✓ Cost, transportation, and extracurricular activities
- ✓ Possible occupations that relate to the student's skills

Academic and Career Planning

Loudoun County Public Schools is dedicated to developing knowledgeable critical thinkers, communicators, collaborators, creators, and contributors, and academic and career planning is part of that process. School counselors and teachers use *Naviance* to ensure students engage in self-exploration, career exploration, and skill development that will assist in accomplishing their personalized goals. Beginning in 7th grade, students will engage in academic and career planning activities to ensure they are college and/or career ready upon graduation through assigned tasks to be completed both in school and at home. For more information regarding the academic and career planning process, please contact the student's school counselor or the VDOE website.

Career Clusters

Career Clusters help students investigate careers and design their courses of study to advance their career goals. For this reason, the state of Virginia has adopted the nationally accepted structure of career clusters, career pathways, and sample career specialties or occupations

A Career Cluster is a grouping of occupations and broad industries based on commonalities. Within each career cluster there are multiple career pathways that represent a common set of skills and knowledge - both academic and technical - necessary to pursue a full range of career opportunities within that pathway, ranging from entry level to management, including technical and professional career specialties. Based on the skill sets taught, all CTE courses are aligned with one or more of the career clusters and pathways. – *Virginia Department of Education*
https://www.careertech.org/sites/default/files/CareerClustersPathways.pdf

Agriculture, Food & Natural Resources
Food Products and Processing Systems; Plant Systems; Animal Systems; Power, Structural and Technical Systems; Natural Resource Systems; Environmental Service Systems; Agribusiness Systems

Architecture & Construction
Design/Pre-Construction; Construction; Maintenance/Operations

Arts, AV Technology & Communications
Audio and Video Technology and Film; Printing Technology; Visual Arts; Performing Arts; Journalism and Broadcasting; Telecommunications

Business, Management & Administration
General Management; Business Information Management; Human Resources Management; Operations Management; Administrative Support

Education & Training
Administration and Administrative Support; Professional Support Services; Teaching/Training

Finance
Securities and Investments; Business Finance; Accounting; Insurance; Banking Services

Government & Public Administration
Governance; National Security; Foreign Service; Planning; Revenue and Taxation; Regulation; Public Management and Administration

Health Sciences
Therapeutic Services; Diagnostic Services; Health Informatics; Support Services; Biotechnology Research and Development

Hospitality & Tourism
Restaurants and Food/Beverage Services; Lodging; Travel and Tourism; Recreation, Amusements and Attractions

Human Services
Early Childhood Development and Services; Counseling and Mental Health Services; Family and Community Services; Personal Care Services; Consumer Services

Information Technology
Network Systems; Information Support and Services; Web and Digital Communications; Programming and Software Development

Law, Public Safety, Corrections & Security
Correction Services; Emergency and Fire Management Services; Security and Protective Services; Law Enforcement Services; Legal Services

Manufacturing
Production; Manufacturing Production Process Development; Maintenance, Installation and Repair; Quality Assurance; Logistics and Inventory Control; Health, Safety, and Environmental Assurance

Marketing
Marketing Management; Professional Sales; Merchandising; Marketing Communications; Marketing Research

Science, Technology, Engineering & Mathematics
Engineering and Technology; Science and Mathematics

Transportation, Distribution & Logistics
Transportation Operations; Logistics Planning and Management Services; Warehousing and Distribution Center Operations; Facility and Mobile Equipment Maintenance; Transportation Systems/ Infrastructure Planning, Management and Regulation; Health, Safety, and Environmental Management; Sales and Service

Grading Scale and Explanation

Grading Scale – Middle and High School

Adopted at the beginning of the 2009-10 school year.

Grade	Numerical Equivalent	Points Awarded
A+	98-100	4.3
A	93-97	4.0
A-	90-92	3.7
B+	87-89	3.3
B	83-86	3.0
B-	80-82	2.7
C+	77-79	2.3
C	73-76	2.0
C-	70-72	1.7
D+	67-69	1.3
D	63-66	1.0
D-	60-62	0.7
F	59 and below	0.0

WP: Withdrawn Passing
WF: Withdrawn Fail

Report Cards

Students receive report cards four times each year. They are issued on the seventh working day for teachers after the end of each nine-week grading period. Loudoun County Public Schools offers an on-line parent portal to view student assignments, assessments, resources, schedules, and grades. The parent portal is intended to be open communication between teachers, students, and parents. Authorization forms requesting access are posted on each school's website. https://www.lcps.org/Domain/17270

Grade Point Average and Class Rank

Grade point average (GPA) and class rank include all courses for which credit was earned or could have been earned in grades 9-12. Also included are the credit-bearing courses (Algebra I, Parts 1 and 2; Algebra I; Geometry; Algebra II; world language) completed at the middle school level. When a course is repeated, both final course grades are included when calculating the GPA and rank. Based on their GPA, students are ranked at the beginning of the senior year and at the end of each semester of the senior year.

If a student withdraws from a course before the end of the eleventh week of the course, the course is not recorded on the scholastic record. All grades earned are recorded on the transcript. Partial credit is not given for year-long courses dropped at the end of the first semester; however, grades earned are included in the determination of grade point average and class rank.

If a student withdraws from a year-long course after the second week of second semester, WP, WF, or F will be recorded for the remaining grading periods. The final grade is recorded on the scholastic record and included when calculating grade point average and class rank if the grade is an F. See corresponding chart under "Dropping Subjects/Withdrawals."

Advanced Placement, Honors, Dual Enrollment, Academy of Engineering and Technology, and Academy of Science courses are all weighted, receiving either 0.5 or 1.0 added to the point value of the grade, with the exception of a grade of "F." Weighting designations are listed in the index of this publication.

General Course Information and Graduation Requirements

Full-year Course – One Credit

*First Grading Period	Courses Dropped will not be counted in GPA or class rank
Second Grading Period	WP or WF recorded Courses dropped will not be counted in GPA or class rank
Third Grading Period	WP or WF recorded Courses dropped will not be counted in GPA or class rank
Fourth Grading Period	WP or F is recorded Courses dropped will not be counted in GPA unless it is an F An F will be calculated into GPA and class rank.

The above explanations for dropping a course does **not** pertain to any Dual Enrollment course.

Semester Course – Half Credit

*First Grading Period	Courses dropped will not be counted in GPA
Second Grading Period	WP or F is recorded Courses dropped will not be counted in GPA unless it is an F F will be calculated into GPA and class rank

GPA	Courses dropped will not be counted in grade point average except when an F is received

*For the first grading period only, a student enrolled in a full-year or one-semester course will have one week (5 school days) after the date on which report cards are sent home, in which to drop a course without having a grade recorded.

Dropping Subjects/Withdrawals

The chart to the left explains if and how dropping a course affects the student's GPA and class rank, as per *LCPS Regulation 5-5*. In addition, dropping a course may alter the student's diploma status or impact VHSL eligibility.

Course Selection, Course Load, and Schedule Changes

Courses listed will be included in the curriculum for the 2020-2021 school year if there are sufficient enrollment and available staff. Students in Grades 6-8 are expected to select and be enrolled in 8 classes, one of them being Resource or Spectrum. Students in Grades 9-11 are expected to select and be enrolled in 7 credit subjects or their equivalent and adhere to their selections and may take up to 8 courses per year through Virtual Loudoun. **Schedule change procedures are established by each school and in special situations**. Any variation requires the principal's permission.

Course Level Changes

Requests to drop down in rigor level from an accelerated yearlong course (i.e., from an Honors level to an Academic level) may not be considered prior to the Interim Time of the First Marking Period or after Interim Time of the Third Marking Period unless otherwise deemed necessary by **the building principal/designee**.

Prior to requesting a drop down in rigor level, communication between student, teacher, parent or guardian, and counselor should take place to support the student in their attempted strategies for success at the selected level of rigor.

If after attempted strategies for success and collaboration with all involved parties, a drop down in rigor level is still requested, the request is passed on to **the building principal/designee to be reviewed for approval**.

If approved, a request to drop down in rigor level will only be made if space is available in the desired course level. The schedule change may require changing other courses and/or teachers within the student's schedule. School administration will determine final placement of new course (course block and teacher). Course grades earned in previous accelerated course will transfer to new course level. The student may be responsible for completing make-up work in the new level to cover any material not covered in the previous level.

Dual Enrollment Course Changes

Withdrawal and grading policies of Dual Enrollment courses are specific to the accrediting college or university. Should the student not pass the first semester of a full year Dual Enrolled course, they will be automatically dropped from the second semester of the Dual Enrolled course. Student course placement for second semester would fall under course level change guidelines as explained above.

Adding a Course

A student may not add a new yearlong course for credit after the 20th hour of instruction. This traditionally falls near the first marking period interim time.

Availability of Classes

Some classes listed in this publication at both the middle and high levels may not be offered at all schools. If enrollment in a class is low, the class may not be available, semester and year-long classes may be combined, or, as stated above, it is possible that the class may not be offered at all. The school counseling offices in each school will be able to provide information on what classes are available at that school.

Selection of Courses

Middle School

Students may select a combination of academic and honors classes in English, Science, Mathematics, and Social Science. Classes designated as Honors in middle school are not weighted when determining a student's grade point average.

Both levels build on previous skills and require academic effort and independent efforts outside school. Both levels expect students to commit to regular and frequent homework; however, honors level classes will require a greater commitment of time and effort outside class. Honors level extension activities will be available for all teachers to use. Grading practices within the honors level will also carry a greater expectation for work, independent student, and concept mastery at a higher cognitive level.

To select courses that reflect the goals for each student, parents and students should consider the following:

- What grades have been earned in the subject over the past few years?
- What information do the standardized test scores and other measures tell the student about their special skills and interests?
- Is the student willing to make the time commitment that each course requires?
- What are the recommendations of the student's parents, teachers, and counselors?

In mathematics, the skills required to be successful are more sequential and developmental than in other courses. Therefore, guidelines are set for recommended placement in middle school mathematics classes based on a student's success on standardized tests and previous math performance.

Parents are welcome to discuss with school counselors, teachers, or the principal any questions they might have about placement for their child in any class.

High School

All high school students should choose classes that maximize their learning opportunities. Challenging high school courses prepare students for further education and successful careers.

Parents and students should consider the following when making decisions about which level to choose:

- Previous performance in subject area
- Standardized test scores
- Commitment of the student
- Recommendations from teachers, counselors, and the principal
- Increased workload
  The applicable Virginia Standards of Learning (SOL) are incorporated in all classes.

Course Level Designations – Middle and High

Honors, AP, and DE: Course content is rapidly paced with additional depth. Lessons are often designed to be complex, abstract, and open-ended.

Academic: Course content and expected student performance require additional reading and writing at a rigorous level.

High school students will make course selections for the upcoming school year in late winter/early spring of the current school year. Available courses can be viewed through StudentVUE/ParentVUE.

Individualized Education

Provisions are made for individualized education for students with identified disabilities. These include programs for students who are learning disabled, emotionally disabled, intellectually disabled, other health impaired, hearing impaired, speech impaired, visually impaired, or physically impaired. Individualized Education Plans (IEPs) specify individual accommodations.

Semester Courses

Students receive one-half unit of credit for each semester course successfully completed, with the exception of some courses offered at the Academies of Loudoun.

Full-Year Courses

Students receive one standard unit of credit based on successful completion of a full-year course. Some full-year courses may offer more than one standard unit of credit.

Students do not receive any partial credit for a full-year course. For example, a student who passes a year-long course at the semester but fails for the year would not earn partial credit for the passing grade at semester, or a student who does not continue a year-long course beyond the first semester does not receive partial credit at the semester for the course; rather, the student must repeat the entire course to obtain credit.

Non-Credit Activities

A student who serves as a student helper or who is scheduled for study hall, Student Cooperative Association (SCA), CAMPUS, PEER Helper program, literary magazine, or video productions does not receive a credit for that class period.

Courses Already Passed

Students who pass a course may repeat it for grade improvements, but a duplicate credit will not be awarded. Both grades are recorded on the student's transcript and are included when calculating grade point average and class rank.

Sequential Electives

Students seeking Standard or Advanced Studies diplomas must earn at least two electives that are sequential. These must be two electives in one subject area such as Art I and II, Early Childhood Education, etc. Students should talk with their school counselor for further details

Fine Arts or Career and Technical Education

A fine arts or career and technical education course is any state-approved course completed in Grades 9-12 in Art, Theatre, Newspaper Journalism, Photojournalism, or Career and Technical Education (including Agricultural Education, Business and Information Technology, Family and Consumer Sciences, Health and Medical Sciences, Marketing Education, Military Science, Trade and Industrial, and Technology and Engineering Education).

Student Credential Programs

Certain programs within Career and Technical Education provide students with an opportunity for credentials that can also count as a "student selected" verified credit toward Virginia graduation requirements. The board has approved a schedule of career and technical examinations for licensure or certification that may be substituted for SOL tests to earn student-selected verified units of credit. Tests for licensure or certification that require the demonstration of knowledge and skills beyond what is associated with a single course may result in the awarding of two units of verified credit.

To obtain the student-selected verified credit, the student must successfully complete the career and technical education course sequence and pass the credential required by the certifying agency.

Such credentials provide students a competitive edge in the workplace, offer better opportunities for earning money for college expenses, may provide increased options in military service, and help to define career pathways.

Information about student-selected tests is available from the student's school counselor or by going to www.doe.virginia.gov and clicking on "Graduation Requirements," then "Substitute for Verified Credit."

Credits from Middle School

Students who complete Algebra I, Geometry, Algebra II, Technology of Robotic Design and/or the first, second, or third year of a world language in middle school earn a high school credit for courses in those subjects. Each credit counts toward graduation requirements and is included in the grade point average and class rank.

Incomplete Grades

Teachers may assign "Incomplete" grades in instances where the required assignments have not been submitted due to unusual but excused circumstances. In such cases, the teacher shall assign a deadline for making up the work; however, the work must be completed by the end of the following grading period. Incomplete grades will result in an "F" if not completed.

Incomplete grades may not be carried over from one academic year to another.

Expunging Grades

The parent of any student who, while in middle school, took a high school credit-bearing course may elect to have the grade (and credit) permanently expunged (removed) from the student's transcript. If the parent elects to have such a grade permanently expunged, written notice of such election must be given by the parent to the student's middle school counselor (rising 7th and 8th graders) or to the school counseling department of the high school the student will attend (rising 9th graders), **on or before August 15 of the year in which the student finishes 8th grade**. Parents of students eligible to make this election shall be provided written notice thereof and a form to be used for such election when the student receives the final report card from the middle school. LCPS Policy §5-5.1.

Promotion in Middle School
From Grade 6 to 7 and Grade 7 to 8:

Pass a minimum of three of the four core academic subjects: English; Mathematics; Science; Social Science.
From Grade 8 to 9:

Pass a minimum of three of the four core academic subjects: English; Mathematics; Science; Social Science **and** pass any year-long elective course, two one-semester courses, or health/physical education course.

Promotion in High School

High school students must have earned the minimum number of credits listed below to be promoted to the next grade level. A student's grade level is not subject to change during the school year.

Grade 10: 5 credits
Grade 11: 11 credits
Grade 12: The student must be scheduled to meet all graduation requirements by June.

Standard and Verified Credits

A standard unit of credit is earned by passing a course with 140 clock hours of instruction.

A verified unit of credit is earned by passing a course and its related end-of-course Standard of Learning (SOL) test where an end-of-course test is required. Students may repeat end-of-course tests to earn the verified credits needed for graduation.

Student Selected Verified Credit

This requirement is for students who entered grade 9 prior to 2018-2019. Students will identify a first-choice student-selected test. If the student fails the test they will remediate then retest before moving onto their second choice. If the student fails the second-choice test, they will remediate and retest. If time remains in the testing window the student may identify a third choice and test.

> *A complete list of VDOE approved exams accepted for a Verified Credit can be found here:*
> *http://www.doe.virginia.gov/testing/substitute_tests/substitute_tests_verified_credit.pdf*

Virtual Loudoun

Virtual Loudoun offers online courses through LCPS VISION using content that is aligned to the Standards of Learning to offer new educational opportunities to students. These courses present educational material and credit courses at the high school level to students using online resources. LCPS also uses other online vendors to offer courses to students. Virtual Loudoun courses are full-year courses offered in a condensed term. Students should expect, on average, to dedicate 140 hours to complete a 1 credit course within the term period.

Student enrollment per school:

- Each high school has a limited number of seats for students in Terms 1 and 2. Prioritizing of available seats is determined by each school's counseling department.
- Once the school has hit its enrollment maximum, slots will be determined based on funding available and the slots remaining from other schools.
- Students are permitted to take one course per academic school year for acceleration (an "8th" credit only).
- Summer Term: Students enrolling for acceleration purposes are permitted to earn a total of two (2) high school credits via Virtual Loudoun summer program in their middle and high school years. Summer Term acceleration restrictions apply to students entering 8th grade in the 2016-2017 school year and beyond.

Earning College Credit while in High School

AP – Advanced Placement

The Advanced Placement Program, often known as AP, is a cooperative education endeavor with the College Board. AP courses allow students the opportunity to take college-level courses while they are enrolled in high school. Students who enroll in an AP course should expect extensive reading, writing, and critical thinking which generally require additional time.

In the spring, students are encouraged to take the nationally standardized AP examination(s). **Colleges and universities may award academic credit and/or special placement if a student earns a qualifying score on the exam given in May.**

Examples of a few benefits of taking AP classes include development of study habits necessary for tackling college-level coursework; improvement of writing skills and problem-solving techniques; studying subjects in greater depth and detail.

DE – Dual Enrollment

Participation in Dual Enrollment (DE) courses allows students to meet requirements for high school graduation while simultaneously earning college credits upon successful completion of the course. DE courses taught at the high school by a credentialed LCPS teacher enable students to earn these credits through agreements with partnering colleges or universities. DE course descriptions list the number of college credits that can be earned.

DE course offerings in LCPS high schools are determined by student interest, existing course offerings, and availability of teachers possessing the endorsements required to teach the course. Not all DE courses will be available at all LCPS high schools. Students should speak with their school counselor to determine which courses are available at their high school.

If a student enrolls in a DE course, they may be required to meet certain admission criteria set forth by the partnering college or university. Students will work directly with their high school to determine what those requirements may be and how to register for that course.

DE courses through Northern Virginia Community College (NVCC) are available for students in 11th and 12th grades, and students must pass the Virginia Placement Test (VPT) administered by NVCC or by a substitute assessment, such as the PSAT or SAT. In addition, there may be certain prerequisites required for specific courses. Some DE classes may require a tuition payment.

Northern Virginia Community College is not bound by LCPS 504 or IEP accommodations already established. Students receiving these services may apply through NOVA's Disability Support Services (DSS) if they would like to have accommodations applied to their dual enrollment courses. Students may also do so online via https://www.nvcc.edu/disability-services/

Approved students will receive a MOA from NOVA that will need to be presented to their DE instructor. Should a student not apply with NOVA DSS, the 504/IEP accommodations can apply to their high school grade only but not their college grade in the DE class. All students are eligible to take advantage of the free tutoring and writing center on any NOVA campus.

The transferability of a college course to another college or university for credit is determined by the receiving institution. Normally, academic courses intended for transfer with a grade of "C" or better will transfer to four-year institutions of higher learning; however, no guarantee can be made to students regarding transferability to *all* colleges and universities. This information may be found on most college and university websites or by contacting the office of admissions.

Current partnering institutions include: Northern Virginia Community College; George Mason University; James Madison University; Richard Bland College; Shenandoah University; University of Illinois.

Graduation Requirements

Students must meet the graduation requirements based on when they enter the 9th grade for the first time. Requirements for graduation listed in this publication reflect those adopted by the Virginia Board of Education. See charts on pages 9 – 12. http://www.doe.virginia.gov/instruction/graduation/index.shtml

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Summer School Graduation

Students completing graduation requirements in a state-accredited summer school program are eligible for diplomas. The last school attended during the regular session awards the diploma.

Standard Diploma Course Requirements (8VAC20-131-51) for Students Entering Ninth Grade for the First Time in 2018-2019 and Beyond			
Subject Area	Standard Credits	Verified Credits	Specifications
English	4	2	N/A
Mathematics	3	1	Courses completed to satisfy this requirement shall include at least two different course selections from among: algebra I, geometry, algebra functions, and data analysis, algebra II, or other mathematics courses approved by the board to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a mathematics course credit.
Laboratory Science	3	1	Courses completed to satisfy this requirement shall include course selection from at least two different science disciplines: earth sciences, biology, chemistry, or physics, or completion of the sequence of science courses required for the International Baccalaureate Diploma and shall include interdisciplinary courses that incorporate Standards of Learning content from multiple academic areas. The board shall approve courses to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a science course credit. Students who complete a career and technical education program sequence and pass an examination or occupational competency assessment in a career and technical education field that confers certification or an occupational competency credential from a recognized industry, or trade or professional association, or acquires a professional license in a career and technical education field from the Commonwealth of Virginia may substitute the certification, competency credential, or license for either a laboratory science or history and social science verified credit when the certification, license, or credential confers more than one verified credit. The examination or occupational competency assessment must be approved by the board as an additional test to verify student achievement.
History and Social Sciences	3	1	Courses completed to satisfy this requirement shall include Virginia and U.S. history, Virginia and U.S. government, and one course in either world history or geography or both. The board shall approve courses to satisfy this requirement. Students who complete a career and technical education program sequence and pass an examination or occupational competency assessment in a career and technical education field that confers certification or an occupational competency credential from a recognized industry, or trade or professional association, or acquires a professional license in a career and technical education field from the Commonwealth of Virginia may substitute the certification, competency credential, or license for either a laboratory science or history and social science verified credit when the certification, license, or credential confers more than one verified credit. The examination or occupational competency assessment must be approved by the board as an additional test to verify student achievement.
Health and Physical Education	2	0	N/A
World Language, Fine Arts or Career and Technical Education	2	0	Per the Standards of Quality, credits earned for this requirement shall include one credit in fine or performing arts or career and technical education. Per the Standards of Quality, a computer science course credit earned by students may be considered a career and technical course credit.
Economics & Personal Finance	1	0	N/A
Electives	4	0	Courses to satisfy this requirement shall include at least two sequential electives as required by the Standards of Quality.
Total	22	5	

Additional Requirements for Graduation:

- **Advanced Placement, Honors, or International Baccalaureate Course or Career and Technical Education Credential** - In accordance with the Standards of Quality, students shall either (i) complete an Advanced Placement, honors, or International Baccalaureate course, or (ii) earn a career and technical education credential approved by the board, except when a career and technical education credential in a particular subject area is not readily available or appropriate or does not adequately measure student competency, in which case the student shall receive satisfactory competency-based instruction in the subject area to satisfy the standard diploma requirements. The career and technical education credential, when required, could include the successful completion of an industry certification, a state licensure examination, a national occupational competency assessment, or the Virginia workplace readiness assessment.
- **Virtual Course** - Students shall successfully complete one virtual course, which may be a non-credit-bearing course or a required or elective credit-bearing course that is offered online.
- **Training in emergency first aid, cardiopulmonary resuscitation (CPR), and the use of automated external defibrillators (AED)** - Students shall be trained in emergency first aid, CPR, and the use of AED, including hands-on practice of the skills necessary to perform cardiopulmonary resuscitation. Students with an IEP or 504 Plan that documents that they cannot successfully complete this training shall be granted a waiver from this graduation requirement, as provided in 8VAC20-131-420 B.
- **Demonstration of the five Cs** - Students shall acquire and demonstrate foundational skills in critical thinking, creative thinking, collaboration, communication, and citizenship in accordance with the Profile of a Virginia Graduate approved by the board.

Standard Diploma Course Requirements (8VAC20-131-50) for Students Entering Ninth Grade for the First Time in 2011-2017			
Subject Area	Standard Credits	Verified Credits	Specifications
English	4	2	N/A
Mathematics	3	1	Courses completed to satisfy this requirement shall include at least two different course selections from among: algebra I, geometry, algebra functions, and data analysis, algebra II, or other mathematics courses approved by the board to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a mathematics course credit.
Laboratory Science	3	1	Courses completed to satisfy this requirement shall include course selection from at least two different science disciplines: earth sciences, biology, chemistry, or physics, or completion of the sequence of science courses required for the International Baccalaureate Diploma and shall include interdisciplinary courses that incorporate Standards of Learning content from multiple academic areas. The board shall approve courses to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a science course credit.

Students who complete a career and technical education program sequence and pass an examination or occupational competency assessment in a career and technical education field that confers certification or an occupational competency credential from a recognized industry, or trade or professional association, or acquires a professional license in a career and technical education field from the Commonwealth of Virginia may substitute the certification, competency credential, or license for either a laboratory science or history and social science verified credit when the certification, license, or credential confers more than one verified credit. The examination or occupational competency assessment must be approved by the board as an additional test to verify student achievement. |
| History and Social Sciences | 3 | 1 | Courses completed to satisfy this requirement shall include Virginia and U.S. history, Virginia and U.S. government, and one course in either world history or geography or both. The board shall approve courses to satisfy this requirement.

Students who complete a career and technical education program sequence and pass an examination or occupational competency assessment in a career and technical education field that confers certification or an occupational competency credential from a recognized industry, or trade or professional association, or acquires a professional license in a career and technical education field from the Commonwealth of Virginia may substitute the certification, competency credential, or license for either a laboratory science or history and social science verified credit when the certification, license, or credential confers more than one verified credit. The examination or occupational competency assessment must be approved by the board as an additional test to verify student achievement. |
Health and Physical Education	2	0	N/A
World Language, Fine Arts or Career and Technical Education	2	0	Per the Standards of Quality, credits earned for this requirement shall include one credit in fine or performing arts or career and technical education. Per the Standards of Quality, a computer science course credit earned by students may be considered a career and technical course credit.
Economics & Personal Finance	1	0	N/A
Electives	4	0	Courses to satisfy this requirement shall include at least two sequential electives as required by the Standards of Quality.
Student Selected Test	0	1	A student may utilize additional tests for earning verified credit in computer science, technology, career and technical education, economics or other areas as prescribed by the board in 8VAC20-131-110.
Career and Technical Education Credential	0	0	Students shall earn a career and technical education credential approved by the Board of Education, except when a career and technical education credential in a particular subject area is not readily available or appropriate or does not adequately measure student competency, in which case the student shall receive satisfactory competency-based instruction in the subject area to satisfy the standard diploma requirements. The career and technical education credential, when required, could include the successful completion of an industry certification, a state licensure examination, a national occupational competency assessment, or the Virginia workplace readiness assessment.
Total	22	6	

Additional Requirements for Graduation:

- **For students entering the ninth-grade class for the first time in 2013-2014 and beyond:** Students shall successfully complete one virtual course, which may be a noncredit-bearing course or a required or elective credit-bearing course that is offered online.
- **For students entering the ninth-grade class for the first time in 2016-2017 and beyond:** Students shall be trained in emergency first aid, cardiopulmonary resuscitation, and the use of automated external defibrillators, including hands-on practice of the skills necessary to perform cardiopulmonary resuscitation. Students with an Individualized Education Program (IEP) or 504 Plan that documents that they cannot successfully complete this training shall be granted a waiver from this graduation requirement, as provided in 8VAC20-131-420 B.

Advanced Studies Diploma Course Requirements (8VAC20-131-51) for Students Entering Ninth Grade for the First Time in 2018-2019 and Beyond			
Subject Area	Standard Credits	Verified Credits	Specifications
English	4	2	N/A
Mathematics	4	1	Courses completed to satisfy this requirement shall include at least three different course selections from among: algebra I, geometry, algebra II, or other mathematics courses above the level of algebra II. The board shall approve courses to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a mathematics course credit.
Laboratory Science	4	1	Courses completed to satisfy this requirement shall include course selections from at least three different science disciplines from among: earth sciences, biology, chemistry, or physics or completion of the sequence of science courses required for the International Baccalaureate Diploma and shall include interdisciplinary courses that incorporate Standards of Learning content from multiple academic areas. The board shall approve additional courses to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a science course credit.
History and Social Sciences	4	1	Courses completed to satisfy this requirement shall include Virginia and U.S. history, Virginia and U.S. government, and two courses in either world history or geography or both. The board shall approve additional courses to satisfy this requirement.
World Language	3	0	Courses completed to satisfy this requirement shall include three years of one language or two years of two languages.
Health & Physical Education	2	0	N/A
Fine Arts or Career & Technical Education	1	0	Per the Standards of Quality, a computer science course credit earned by students may be considered a career and technical education course credit.
Economics and Personal Finance	1	0	N/A
Electives	3	0	Courses to satisfy this requirement shall include at least two sequential electives as required by the Standards of Quality.
Total	26	5	

Additional Requirements for Graduation:

- **Advanced Placement, Honors, or International Baccalaureate Course or Career and Technical Education Credential** - In accordance with the Standards of Quality, students shall either (i) complete an Advanced Placement, honors, or International Baccalaureate course or (ii) earn a career and technical education credential approved by the board, except when a career and technical education credential in a particular subject area is not readily available or appropriate or does not adequately measure student competency, in which case the student shall receive satisfactory competency-based instruction in the subject area to satisfy the advanced studies diploma requirements. The career and technical education credential, when required, could include the successful completion of an industry certification, a state licensure examination, a national occupational competency assessment, or the Virginia workplace readiness assessment.
- **Virtual Course** - Students shall successfully complete one virtual course, which may be a non-credit-bearing course or a required or elective credit-bearing course that is offered online.
- **Training in emergency first aid, cardiopulmonary resuscitation (CPR), and the use of automated external defibrillators (AED)** - Students shall be trained in emergency first aid, CPR, and the use of AED, including hands-on practice of the skills necessary to perform cardiopulmonary resuscitation. Students with an IEP or 504 Plan that documents that they cannot successfully complete this training shall be granted a waiver from this graduation requirement, as provided in 8VAC20-131-420 B.
- **Demonstration of the five Cs** - Students shall acquire and demonstrate foundational skills in critical thinking, creative thinking, collaboration, communication, and citizenship in accordance with the Profile of a Virginia Graduate approved by the board.

Note: Loudoun County Public Schools considers a computer science course to count toward a mathematics credit only, unless it is part of the AET course of study.

Advanced Studies Diploma Course Requirements (8VAC20-131-51) for Students Entering Ninth Grade for the First Time in 2011-2012 through 2017-2018			
Subject Area	Standard Credits	Verified Credits	Specifications
English	4	2	N/A
Mathematics	4	2	Courses completed to satisfy this requirement shall include at least three different course selections from among: algebra I, geometry, algebra II, or other mathematics courses above the level of algebra II. The board shall approve courses to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a mathematics course credit.
Laboratory Science	4	2	Courses completed to satisfy this requirement shall include course selections from at least three different science disciplines from among: earth sciences, biology, chemistry, or physics or completion of the sequence of science courses required for the International Baccalaureate Diploma and shall include interdisciplinary courses that incorporate Standards of Learning content from multiple academic areas. The board shall approve additional courses to satisfy this requirement. Per the Standards of Quality, a computer science course credit earned by students may be considered a science course credit.
History and Social Sciences	4	2	Courses completed to satisfy this requirement shall include Virginia and U.S. history, Virginia and U.S. government, and two courses in either world history or geography or both. The board shall approve additional courses to satisfy this requirement.
World Language	3	0	Courses completed to satisfy this requirement shall include three years of one language or two years of two languages.
Health & Physical Education	2	0	N/A
Fine Arts or Career & Technical Education	1	0	Per the Standards of Quality, a computer science course credit earned by students may be considered a career and technical education course credit.
Economics and Personal Finance	1	0	N/A
Electives	3	0	Courses to satisfy this requirement shall include at least two sequential electives as required by the Standards of Quality.
Student Selected Test	0	1	A student may utilize additional tests for earning verified credit in computer science, technology, career or technical education, economics or other areas as prescribed by the board in 8VAC20-131-110.
Total	26	9	

Additional Requirements for Graduation:

- **Virtual Learning** - Students shall successfully complete one virtual course, which may be a noncredit-bearing course, or may be a course required to earn this diploma that is offered online.

- **Training in emergency first aid, cardiopulmonary resuscitation (CPR), and the use of automated external defibrillators (AED)** - Beginning with first-time ninth-grade students in the 2016–2017 school year, students shall be trained in emergency first aid, cardiopulmonary resuscitation, and the use of automated external defibrillators, including hands-on practice of the skills necessary to perform cardiopulmonary resuscitation. Students with an IEP or 504 Plan that documents that they cannot successfully complete this training shall be granted a waiver from this graduation requirement, as provided in 8VAC20-131-420 B.

Note: Loudoun County Public Schools considers a computer science course to count toward a mathematics credit only, unless it is part of the AET course of study.

Modified Standard Diploma

The Modified Standard Diploma is intended for certain students at the secondary level who have a disability and are unlikely to meet the credit requirements for a Standard Diploma. Eligibility and participation in the program are determined by the student's IEP team and the student, when appropriate. Decisions of eligibility and participation may be made at any point after the student's eighth grade year. Written consent from parent/guardian must be obtained for a student to choose this diploma program.

The student must:

- be allowed to pursue a Standard or Advanced Studies Diploma at any time throughout his or her high school career;
- not be excluded from courses and tests required to earn a Standard or Advanced Studies Diploma; and
- pass literacy and numeracy competency assessments as prescribed by the Board:
    - For students who entered the ninth grade prior to 2000-01, the literacy and numeracy competency assessments were the reading and mathematics subtests of the LPT.
    - For students who entered the ninth grade in 2000-01 and beyond, the literacy and numeracy competency assessments are the eighth-grade English Reading test and the eighth-grade Mathematics SOL test (Board action – November 30, 2000).
    - The Board also approved four additional substitute assessments to satisfy the literacy and numeracy requirements for students pursuing a Modified Standard Diploma.

NOTE: The Modified Standard Diploma will not be an option for students with disabilities who enter the ninth grade for the first time beginning in 2013-2014. Credit accommodations allow students with disabilities who previously would have pursued a Modified Standard Diploma to earn a Standard Diploma.

Discipline Area	Standard Units of Credit
English	4
Mathematics[1]	3
Laboratory Science[2]	2
History & Social Sciences[3]	2
Health & Physical Education	2
Fine Arts or Career & Technical Education	1
Electives[4]	6
Total	**20**

[1]Courses completed to satisfy this requirement shall include content from among applications of algebra, geometry, personal finance and statistics in courses that have been approved by the Board.

[2]Courses completed shall include content from at least two of the following: applications of earth science, biology, chemistry, or physics in courses approved by the Board.

Electives

- **Sequential Electives** – Effective with the graduating class of 2003, students who wish to receive a Standard or Modified Standard Diploma must successfully complete two sequential electives. On February 5, 2002, the Board of Education approved Guidelines for Sequential Electives for the Standard and Modified Standard Diploma (PDF).
    - Sequential electives may be in any discipline as long as the courses are not specifically required for graduation.
    - Courses used to satisfy the one unit of credit in a fine arts or career and technical education course may be used to partially satisfy this requirement.
    - For career and technical education electives, check with the Office of Career and Technical Education at (804) 225-2051.
    - An exploratory course followed by an introductory course may not be used to satisfy the requirement.
    - An introductory course followed by another level of the same course of study may be used.
    - Sequential electives do not have to be taken in consecutive years.

- **Fine Arts and Career and Technical Education –** The Standard, Advanced Studies, and Modified Standard Diplomas each contain a requirement for one standard unit of credit in Fine Arts or Career and Technical Education. The Standards of Accreditation do not require that courses used to satisfy the requirement of Fine Arts or Career and Technical Education be approved by the Board. Therefore, local school officials should use their own judgment in determining which courses students take to satisfy this requirement.

Other Graduation Certificates and Diplomas

Certificate of Program Completion
Available to students who complete prescribed programs of studies defined by a local school board but who do not qualify for diplomas.

GED
Currently, the only Virginia board-approved HSE examination in Virginia is the General Educational Development (GED) test, which was developed to enable persons who have not graduated from high school to demonstrate the attainment of abilities normally associated with completion of a high school program of study.

Graduation Diploma Seals of Achievement

An Application may be required to obtain certain seals

Governor's Seal
The Governor's Seal is awarded to students who complete the requirements for an Advanced Studies Diploma with an average grade of "B" or better, and successfully complete college-level coursework that will earn the student at least nine transferable college credits in Advanced Placement (AP), International Baccalaureate (IB), Cambridge, or dual enrollment courses.

Board of Education Seal
The Board of Education Seal is awarded to students who complete the requirements for a Standard Diploma or Advanced Studies Diploma with an average grade of "A" beginning with the ninth-grade class of 2006-2007 and beyond.

Board of Education's Career & Technical Education Seal
The Board of Education's Career & Technical Education Seal is awarded to students who:
- earn a Standard or Advanced Studies Diploma and complete a prescribed sequence of courses in a career and technical education concentration or specialization that they choose and maintain a "B" or better average in those courses
- OR pass an examination or an occupational competency assessment in a career and technical education concentration or specialization that confers certification or occupational competency credential from a recognized industry, trade or professional association
- OR acquire a professional license in that career and technical education field from the Commonwealth of Virginia.

The Board of Education shall approve all professional licenses and examinations used to satisfy these requirements. See The Path to Industry Certification for the current approved licenses and examinations.

Board of Education's Excellence in Civics Education Seal
The Board of Education's Excellence in Civics Education Seal is awarded to students who meet each of the following four criteria:
- Satisfy the requirement to earn a Modified Standard Diploma, a Standard Diploma or an Advanced Studies Diploma
- Complete Virginia & United States History and Virginia & United States Government courses with a grade of "B" or higher
- Complete 50 hours of voluntary participation in community service or extracurricular activities, such as volunteering for a charitable or religious organization that provides services to the poor, sick or less fortunate; participating in Boy Scouts, Girl Scouts or similar youth organizations; participating in Junior Reserve Officer Training Corps (JROTC); participating in political campaigns, government internships, Boys State, Girls State or Model General Assembly; and participating in school-sponsored extracurricular activities that have a civics focus. Any student who enlists in the United States military prior to graduation will be deemed to have met this community service requirement.
- Have good attendance and no disciplinary infractions as determined by local school board policies.

Board of Education's Seal of Biliteracy

The Board of Education's [Seal of Biliteracy](#) is awarded to students who earn a Board of Education-approved diploma and:
- Pass all required End-of-Course 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

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:
- 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.

Other Diploma Seals or Awards

Local school divisions may award other diploma seals or awards for exceptional academic, CTE, citizenship or other exemplary performance in accordance with criteria defined by the local school board. The design, production and use of those seals is the responsibility of the local school boards awarding the seal.

Transferring into Virginia Public Schools as a High School Student

Each transfer student's academic record is evaluated to determine the number of standard units of credits that have been earned, as well as to ascertain the remaining number of standard and verified units of credit a student needs to graduate. The type of diploma a student wishes to pursue determines the total number of standard and verified credits necessary for graduation. **Transfer courses which a student completed in a school division prior to enrolling in LCPS are weighted only if those courses are weighted as honors courses in LCPS.** For further details about transferring, go to www.doe.virginia.gov and click on transfer information under "Graduation Requirements."

Below is a summary chart of credits needed for graduation. Students should discuss the specific course requirements and course options with the school counselor. "Beginning" includes the time from the first day of school until the end of the first twenty hours of instruction. "During" indicates that the student enrolled after the first twenty hours of instruction.

Requirements for First-time Transfer Students as a High School Student

At the beginning of or during ninth grade:

2020-2021 school year and prior years:
    All requirements of [8VAC20-131-50](#) for the Standard and Advanced Studies Diplomas

At the beginning of or during tenth grade:

2020-2021 school year and prior years:
(2019-2020) All requirements of [8VAC20-131-50](#) for the Standard and Advanced Studies Diplomas except:
(2018-2019 and prior) For a Standard Diploma only 4 (four) verified credits are required: English (2); Mathematics (1); History (1); Science (1).
(2018-2019 and prior) For an Advanced Studies Diploma only 6 (six) verified credits required: English (2); Mathematics (1); History (1); Science (1); Student Selected (1).
2020-2021 school year:
    All requirements of [8VAC20-131-50](#) for the Standard and Advanced Studies Diplomas

At the beginning of eleventh grade

2020-2021 school year and prior years:
(2019-2020) All requirements of 8VAC20-131-50 for the Standard and Advanced Studies Diplomas except:
(2018-2019 and prior) For a Standard Diploma only 4 (four) verified credits are required: English (1); Mathematics (1); History (1); Science (1).
(2018-2019 and prior) For an Advanced Studies Diploma only 6 (six) verified credits required: English (2); Mathematics (1); History (1); Science (1); Student Selected (1).

During eleventh grade

2020-2021 school year and prior years:
(2019-2020) All requirements of 8VAC20-131-50 for the Standard and Advanced Studies Diplomas except:
(2018-2019 and prior) For a Standard Diploma only two (2) verified credits required: English (1), and student selected (1). The student-selected credit must be in mathematics if mathematics testing is required by federal law.
(2018-2019 and prior) For an Advanced Studies Diploma only four (4) verified credits required: English (1), and student-selected (3). One of the student-selected credits must be in mathematics if mathematics is required by federal law.

At the beginning of twelfth grade

2020-2021 school year and prior years:
All requirements of 8VAC20-131-50 for the Standard and Advanced Studies Diplomas except:
For a Standard Diploma only two (2) verified credits required: English (1), and student selected (1). The student-selected credit must be in mathematics if mathematics testing is required by federal law.
For an Advanced Studies Diploma only four (4) verified credits required: English (1), and student-selected (3). One of the student-selected credits must be in mathematics if mathematics is required by federal law.

During twelfth grade

2020-2021 school year and prior years:
Students should be given every opportunity to earn a diploma following the graduation requirements in 8VAC20-131-50. If not possible, arrangements should be made for the student's previous school to award the diploma. If these arrangements cannot be made, a waiver of the verified credit requirements may be requested by the local school board to the Virginia Department of Education.

Standardized Exams and Assessments

PSAT – Preliminary Scholastic Assessment Test

Students benefit from practice in taking this test and can identify academic strengths and weaknesses while they have the time to work to improve their scores.

Students in the 10th grade are given the exam to provide practice in reading, math, and writing skills to prepare for college admissions exams.

Students in the 11th grade may be eligible for special scholarship competitions based on their PSAT score by taking the PSAT/NMSQT. Organizations include the National Merit Scholarship, the national Achievement Program, and the National Hispanic Scholars Program.

This test is administered at all high schools on the national test date. The PSAT includes a writing component but does not include an essay.

SAT

Students are encouraged to take the SAT beginning in 11th grade. They may repeat the test several times. The SAT tests are administered several times each year at high schools in and around Loudoun County. Students must register approximately 6 weeks (or more) in advance of the test. Students may register online at www.collegeboard.org. Through online registration, students will learn which testing sites have space availability.

SAT Subject Tests

Subject tests measure students' knowledge and skills in a particular subject and their ability to apply that knowledge. Tests are offered in many subjects. Students may register online at www.collegeboard.org.

The test(s) should be taken toward the end of the completion of the subject. For example, if a student is completing Chemistry in 11th grade, he/she should take the SAT Subject Test in Chemistry in the spring of the 11th grade.

Not all colleges and universities require SAT Subject Tests. Students should check test requirements with colleges in which they have interest.

Students may register for up to three tests in one day. The tests are given on the same dates as certain SAT Reasoning tests.

SAT Subject Test Preparation Booklet, a free publication, is available on the College Board website and provides information about the tests and sample test questions.

ACT – American College Test

The ACT measures academic achievement in English, mathematics, reading, and science reasoning. A writing test is optional. Students should check with specific colleges to see if a writing test is required. Students may register online at www.act.org.

The ACT is administered several times each year at high schools in and around Loudoun County. Students should register several weeks prior to the exam to ensure space availability.

AP – Advanced Placement Exams

AP examinations are administered in the spring dates selected by the College Board. Exams measure the student's knowledge in specific subject areas.

AP courses, taught by dedicated and committed high school teachers, lay the groundwork for students to succeed on the AP exams. In LCPS, all students enrolled in AP classes are encouraged to complete the AP experience by taking the exams near the end of the AP class.

The student's transcript reflects the AP designation independent of the student's election to take the AP exam. All final grades are weighted by 1.0 if the student passes the course.

Students who elect to take an AP exam without taking the course may have their scores sent to the college(s) or university(ies) to which they plan to apply; however, units of credit are awarded only to those students who complete the related AP courses.

TOEFL – Test of English as a Foreign Language

The TOEFL measures a student's ability to read, write, and understand English. Students who are applying to college and for whom English is a second language can demonstrate their ability to use English. Some colleges and universities require this test for second language speakers. Some colleges and universities will accept the SAT Subject Test in English as a second language in lieu of the TOEFL.

Special Programs and Opportunities

AVID

AVID, or Advancement via Individual Determination, is a national program targeting students in the academic middle – "B", "C", or even "D" students – who have a desire to go to college and the willingness to work hard in rigorous middle and high school courses. AVID students enroll in honors and AP courses, when eligible, and an AVID elective course. During this elective class, students learn organizational and study skills, work on building critical thinking skills, receive academic help from peers and tutors, and participate in enrichment and motivational activities. AVID students are expected to participate each year the elective is offered. AVID is available at the following schools: SMM and STM middle schools; DHS, PVHS, and THS high schools.

CAMPUS

The College Achievement & Multicultural Program for Unique Students (CAMPUS) is an academic and college preparation initiative for students in grades 9-12. CAMPUS is a high school college access program designed to remove barriers and/or meet the specific needs of first-generation college-bound students attending Loudoun County Public Schools.

CAMPUS seeks to provide support and encouragement to students who demonstrate the ability to achieve academic success and college admission. Admission to, and graduation from college are among the goals of CAMPUS. Students must commit to attending mandatory CAMPUS meetings and/or classes during the school day and CAMPUS activities throughout the year. Parents also are an integral part of CAMPUS and its success. Parents are encouraged to participate in CAMPUS initiatives and to support their students in the college search and application process.

Douglass School

Douglass School, Loudoun County Public School's Center for alternative education, offers the Alternative Education Program (AEP) for under-credited students, students who may not prefer a large traditional high school, and for students who have moved into LCPS from another school system that used an alternative schedule format (4x4). Douglass strives to create an environment in which students are able to perform to the best of their ability and fosters respect, responsibility and cooperation. The AEP offers smaller class sizes, and alternative block schedule, an emphasis on organization and study skills, and personalized instruction to help students experience success. Douglass courses follow the LCPS curriculum including the administration of end-of-year SOL exams. Students adhere to the same behavioral expectation and complete the same requirements for promotion/graduation as other LCPS students. Openings are limited and referrals are made through a home school administrator in collaboration with the home school counselor.

Scheduled Early Dismissal

All students are to be enrolled in school for the full school day; the standard school day for students shall average at least five and one-half teaching hours. Students enrolled in cooperative education programs may be granted an early dismissal as long as they are enrolled in five credit subjects or their equivalent. See VA Reg 8 VAC 20-131-5 for further definition.

In cases of extreme hardship, a junior or senior must obtain an application from the principal for early dismissal that is submitted to the Superintendent or his designee for approval.

Early College Scholars

The Early College Scholars program allows students to commit to earning a full semester of college credit before leaving high school. Students may earn the credits through a combination of Advanced Placement and Dual Enrollment courses. Students become "Early College Scholars" by meeting the qualifications and signing an agreement with their school counselor.

To qualify, a student must:
- Have a "B" average or better
- Be pursuing an Advanced Studies Diploma
- Be completing or have completed college-level coursework, such as Advanced Placement or Dual Enrollment equal to at least 15 transferable college credits.

Students in the program may also register for televised and online Virtual Advanced Placement classes not offered by LCPS with prior approval.

To register, students and parents should speak with their school counselor at the end of their junior year.

Thomas Jefferson High School for Science and Technology

TJHSST students are selected on the basis of exceptional quantitative skills and interest in science, technology, engineering, or mathematics. Since this Governor's School for Science and Technology is located in Northern Virginia, the school serves qualified applicants from several area school districts, including Loudoun County. LCPS provides transportation for all students who are accepted to this school.

Students are selected to attend through a competitive process that holistically evaluate4s admissions test performance, academic achievement, an essay, teacher recommendations, and self-reported interests and activities. Approximately 15% of the applicants are accepted. Most students enter as 9th graders. Replacements are selected for vacancies at the 10th & 11th grade levels. Applications are available online. The student should see their counselor by September 15th of their 8th grade year for the most current information. Questions should be directed to the TJHSST Admissions Office at 571-423-3770. More information can be found at their website: https://www.fcps.edu/registration/thomas-jefferson-admissions.

Athletic and Activity Participation

In order for a student to participate on a Loudoun County Public School athletic team, each athlete must have satisfied all academic eligibility requirements as listed below.

- In the first semester, the student must be enrolled in no fewer than five subjects, or their equivalent, offered for credit and which may be used for graduation, and have passed five subjects, or their equivalent, offered for credit and which may be used for graduation the immediate preceding year of the immediate preceding semester for schools that certify credit on a semester basis.
- In the second semester, the student must be enrolled in no fewer than five subjects, or their equivalent, offered for credit and which may be used for graduation, and have passed five subjects, or their equivalent, offered for credit and which may be used for graduation the immediate preceding semester.
- The student cannot receive monies or awards for playing and/or competing in athletic events.
- The student cannot sign a contract to play professional sports while they still maintain high school eligibility.
- The student cannot be 19 years of age on or before August 1st of the current year.
- The student has only eight consecutive semesters of eligibility after they enter the 9th grade for the first time.
- The student must abide by the school activity's rules and regulations.
- The student may not repeat courses for eligibility purposes for which credit has been previously awarded.
- Eighth-grade students who become 14 years of age on or before August 1st are eligible for sub-varsity athletics (including pre-season and post-season conditioning programs) at the high school they would attend. All other 8th grade students become eligible upon meeting requirements for promotion to grade 9.
- Any student academically ineligible for the winter sports tryouts will remain ineligible for the entire winter season.

Note: The state department of education must recognize credit for courses. Such credit is to be awarded for the semester in which the work is scheduled to be completed. Credit for summer school work must be applied to the immediate preceding semester or year.

Students and parents should visit www.ncaa.org for college eligibility requirements, which includes standardized testing information.

Math Progression Chart

Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
Math 6	Foundations of Algebra (Math 7 SOL)	Pre-Algebra (Math 8 SOL)	Algebra 1	FADA	Geometry	Algebra 2 OR Algebra 2/Trig
		Algebra 1	FADA	Geometry	Algebra 2 OR Algebra 2/Trig	AFM, Prob-Statistics/Discrete, AP Statistics, Computer Math, AP Computer Science
			Geometry	Geometry	Algebra 2/Trig	Precalculus
				Algebra 2 OR Algebra 2/Trig	Precalculus	Mathematical Analysis
			Algebra 2	Algebra 2/Trig	Mathematical Analysis	Precalculus, Prob-Statistics/Discrete, AP Statistics, Computer Math, AP Computer Science
			Algebra 2/Trig	AFM, Prob-Statistics/Discrete, AP Statistics, Computer Math, AP Computer Science	AFM, Prob-Statistics/Discrete, AP Statistics, Computer Math, AP Computer Science	Mathematical Analysis
				Precalculus	Mathematical Analysis	Calculus AB
				Mathematical Analysis	Calculus AB	AP Statistics, Computer Math, AP Computer Science
					Calculus BC	Calculus AB or BC
					AFM, Probability-Statistics/Discrete, AP Statistics, Computer Math, AP Computer Science	AP Statistics, Computer Math, AP Computer Science
						Calculus AB or BC
						Calculus BC
						AP Statistics, Computer Math, AP Computer Science
						Multivariable Calculus Dual Enrollment
						AP Statistics, Computer Math, AP Computer Science
Foundations of Algebra (Math 7 SOL)	Pre-Algebra (Math 8 SOL)	Algebra 1	Geometry	Algebra 2	Precalculus	Mathematical Analysis
				Algebra 2/Trig	Mathematical Analysis	Calculus AB
			FADA	Geometry	Algebra 2	Calculus AB or BC
					Algebra 2/Trig	AP Statistics, Computer Math, AP Computer Science
						Precalculus
						Mathematical Analysis

Middle School Course Descriptions

Grades 6 - 8

Middle School Program Overview

In Loudoun County Public Schools, middle school provides a supportive and stimulating environment for students as they make the transition into adolescence, increasing academic demands and greater self-reliance.

The middle school program takes in to account the developmental needs of young teenage years that are characterized by uneven social, physical, emotional, and intellectual development.

Middle school bridges the elementary school years that focus primarily on developing basic skills and the high school years that emphasize specialized preparation for post-high school education and careers.

While using and further developing the basic skills, middle school encourages students to explore a variety of subject areas and activities, including careers and special interests.

Middle School Structure

Houses: Each middle school is divided into three sub-units called Houses, one for each grade level. Each grade level is assigned to an academic house for core curriculum classes, with students moving to other educational elective areas outside their House.

Staff in each House work together to coordinate activities, deliver instruction, and meet a multitude of student needs. The staff in each House may include:

- **Dean**: the primary administrator for the area
- **School Counselor**: provides academic, college/career, and social/emotional counseling to individuals, groups, and classes
- **Teachers**: provide instruction in the core academic areas and help students develop their academic abilities and skills
- **Secretary**: provides the clerical needs of the House

Each student is assigned to a homeroom where the student receives report cards and general information.

Block Schedule

Students at each middle school are in an eight-period, alternating block schedule. Each instructional block is approximately 89 minutes in length. Students have four instruction blocks daily.

Every other day most students have a **Resource** period. For 6th and 7th grade students the resource period may last approximately 45 minutes; for 8th grade students, the resource period lasts for an entire block. Students selected for Spectrum participate in Spectrum instead of resource period. Some of the activities of the resource period include working directly with teachers to expand learning and interests, receiving remediation and reinforcement of skills, reviewing information that is proving challenging, working on homework, and using the media center.

Spectrum, a year-long class, provides enrichment for 6th, 7th, and 8th grade students who have been identified as gifted in terms of general intellectual ability. This course is offered in place of resource for 6th and 7th graders. 8th graders split a 90-minute block between Spectrum and resource. Eligibility for the gifted program is determined by prescribed criteria established by the school division and approved by the Commonwealth of Virginia. Spectrum offers a variety of multi-disciplinary academic experiences with an emphasis on critical thinking skills and problem solving. Gifted students are further challenged academically by enrolling in honors level instruction, such as science, English, and social science, or in advanced math classes.

Interdisciplinary Teaming

Students are assigned to an interdisciplinary team, a group of academic teachers who share a common group of students. These teachers collaborate to plan and coordinate lessons and assignments, examine individual needs for enrichment and remediation, meet with parents, and work to assure student success.

Registering for Classes

The registration process for rising 6th and current 6th, 7th, and 8th grade students occurs near the beginning of the second semester of each year. School counselors are generally responsible for this activity, but teachers are also involved in making recommendations.

- The grade-level school counselor meets with students in a small group, classroom or resource setting, or individually to explain course options, recommendations, and requirements. Course selections are based on the student's current academic progress and interests as well as teacher recommendations.
- The student shares these course selections with parent/guardians for review. Any questions concerning course selection should be directed to the student's school counselor.
- 6th grade students begin to develop an Academic Career Plan (ACP) with the assistance of their school counselor. The plan allows students to tentatively plan future high school course selections that support goals for further education and roles in the world of work. Plans can be changed during high school based on the changing needs and desires of individual students.

Decisions made during middle school influence a student's success in academics and future choices.

Course Selection, Courses for High School Credit

The courses selected during middle school impact which courses the students can take during high school.

Students who complete Algebra I, Geometry, or one or two years of a world language in middle school will be able to complete advanced classes, even college-level classes, while still in high school.

Students who begin world language study during middle school will be able to advance their command of the language because they will be able to spend more time studying the language. Also, some students choose to study a second world language while in high school. For other students, early world language study allows them opportunities to pursue advanced career and technical education courses, pursue fine arts studies in more depth, or delve into other areas of study.

Virtual Loudoun courses are not available to middle school students during Terms 1 and 2. They may enroll in one (1) course in Term 3-Spring/Summer Session. In addition, non-LCPS courses are not available to middle school students during the school year or during the summer. Courses taken at an institution or with a vendor may not be transferred in for credit during middle school.

Academic and Career Plans

All students will develop a personal Academic and Career Plan (ACP) during 7th grade with the support of their school counselor and family to be reviewed by the fall of the student's 8th grade year and completed by their 11th grade year. The components of the ACP shall include, but not be limited to, the student's program of study for high school graduation and a postsecondary career pathway and cluster based on the student's academic and career interests.

The ACP is designed to be a working document that maximizes student achievement by having the student accomplish goals in middle and high school that lead to postsecondary and career readiness. In addition, it will provide each middle and high school student a personal learning plan that aligns academic and career goals with the student's course of study.
http://www.doe.virginia.gov/instruction/graduation/academic_career_plan/index.shtml

How to Read Course Descriptions

The following explains the descriptions, requirements, and electives for each grade level of middle school:

- Course Title: name assigned to each course
- Course Code: number assigned to the course for use with the Student Information System. The course code is generally used by school administrators and school counselors to plan schedules
- Levels: indicate whether the course is grade level or honors
- Prerequisites: the requirements a student must meet to be able to enroll in that class
- Credit: indicates if course receives a high school credit
- SOL Icon: SOL Test indicates that the course has a Virginia Standards of Learning test at the end of the school year

The Mathematics Progression Charts included in this publication assist students with their ACPs.

Grade 6

English 6
Grade Level 100000
Honors 100200
SOL Test In Grade 6, oral language instruction focuses on participation in small-group activities. Reading instruction emphasizes the elements of literature and narrative structure, the ability to compare information from different sources, and the ability to select information appropriate for a given purpose. Students learn to expand and embed ideas in their writing, to choose appropriate adverbs, and to master subject-verb agreement. Teachers instruct students in the use of word-reference materials to build their vocabulary.

Reading Strategies Workshop (Grade 6)   101600
Prerequisite: Schools identify students eligible for this program
This course is for students whose reading performance indicates a need to strengthen basic reading skills and strategies, as well as to help students to prepare for the SOL tests. Instruction will focus on phonics, fluency, comprehension, critical thinking, vocabulary, reading engagement, viewing, and test-taking. It will be differentiated according to students' needs. The course will use materials that will assist students with reading in other courses.

Mathematics 6   510000
Level: Grade Level
SOL Test Mathematics 6 provides increased opportunities for students to apply critical thinking and problem solving as part of their mathematics studies. Activities allow students to make mathematical connections to the constantly changing world in which we live. Proportional reasoning, mathematical communication and reasoning, as well as mathematical applications are emphasized throughout the course. Problem solving is included in all areas of study so students develop a wide range of skills and strategies for solving standard and nonstandard problems. Topics including estimation, number theory, geometry, algebra, and measurement form the foundation for the study of advanced mathematics later in high school. Emerging technologies are incorporated into the curriculum in order to allow students opportunities to explore concepts. Students completing this course will take the Grade 6 Mathematics SOL test.

Foundations of Algebra   514000
SOL Test   This course is designed to prepare students for Algebra I. It provides opportunities for students to apply problem solving and critical thinking as part of their mathematics studies. Topics include practical applications of rational numbers and proportional reasoning, geometry and measurement, algebraic equations, and data representation and interpretation. Mathematical communication and reasoning are emphasized throughout the course. Students completing this course will take the Grade 7 Mathematics SOL test.

Science 6
Grade Level 610000
Honors 610200
Science 6 presents an integrated focus on the role of the sun's energy on Earth systems, water in the environment, air and the atmosphere, space, forces, transformations of energy and matter, and basic chemistry concepts. The 6th grade course emphasizes experimentation and data analysis.

Science 6 focuses on continued development of the students' understanding of the nature of science. Lessons are designed to encourage students to create explanations for science concepts that are based on rules of evidence and logical thinking through experimentation, observation, and manipulation of variables.

U.S. History to 1865
Grade Level   710000
Honors   710200

Why do people start a whole new country? How do they do that? Once a country gets started, how do you keep it from falling apart? These are three key questions students learn to answer as they study the first part of American history. As they learn about the birth of our country, and its "rebirth" during the Civil War, students will develop the ability to:

- Read text for content information
- Read and compare primary sources
- Read for the "point of view" of a document
- Understand cause-effect relationships
- Think critically
- Understand diverse cultural backgrounds

- Write with structure and purpose
- Participate in class discussion
- Develop their memory for, and appropriate usage of, Social Science vocabulary
- Apply geographical terms and concepts
- Interpret famous historical speeches

As students build skills in the areas listed above, they develop regular, independent thinking habits in U.S. History. This means they will become "historical thinkers"!

Health and Physical Education 6   410000

Students are offered a variety of challenging activities with an emphasis on fitness for life. In middle school, health and physical education classes are offered every other day.

Students are exposed to instruction in anatomy and physiology, fitness planning, social development, and energy balance. In addition, a wide variety of activities including cooperative games, individual and dual sports, team sports, rhythmic activities, physical fitness testing, lifetime fitness, and recreational activities are offered. The 6th grade health curriculum includes instruction in diet and nutrition, stress and mental health, lifetime fitness and wellness, first aid and safety, communicable and non-communicable diseases, gangs, bullying, health advocacy, and refusal strategies related to alcohol, tobacco, and other drugs. Family Life Education (FLE) is also included in this course.

Introduction to Computer Applications   SEM   808700
One Semester
`Elective`   This course is designed to introduce middle school students to the basics of computers, keyboarding skills, and potential careers. Students will develop and enhance touch skills for entering information using a keyboard to compose and produce personal, educational, and professional documents.

This course is infused with Entrepreneurship competencies and Computer Science objectives.

Art 6   200700
One Semester
`Elective`   Art 6 infuses art production, art history, art criticism, and aesthetic critiques. The 6th grade program is designed to provide students with the opportunity to continue to develop a foundation of varied skills, techniques, concepts, and ideas. Students engage in the process of creating, presenting, responding, and connecting with their art and the work of others.

The students establish a continuing portfolio to include written and visual documentation of the creative process.

Resource 6   003000

Students are assigned to a resource class every other day, occupying the same block with the selected music class.

During the class, students are able to take advantage of a variety of opportunities such as obtaining help from teachers, making up tests and assignments, selecting and participating in various enrichment and enhancement activities provided by the school, participating in school counseling classes such as study skills and time management, completing homework, researching topics and assignments, and participating in peer tutoring.

Spectrum 6   010000
Prerequisite: Students are found eligible through a multi-step screening process conducted by educational professionals in Loudoun County and are formally identified as gifted in terms of general intellectual ability.

The curriculum for 6th graders includes the following units:

- Business & Economics
- Technology & Engineering
- Communication & Culture
- Ethics & Perspectives

SOLs from various courses across the middle school curriculum are incorporated into instructional activities.

Chorus 6   235000
`Elective`   This course is for students who like to sing and want to develop their singing skills. Emphasis is placed on developing appropriate vocal techniques and skills necessary for singing in an ensemble. Essential music theory skills will be stressed, including reading notation, ear training and sight singing. Students will develop choral literacy by singing a variety of literature that is sacred and secular. Participation in performance activities, such as winter and spring concerts is required.

Music Lab 6   205000
`Elective`   This class is designed to enable students to enjoy life-long involvement with music as an educated consumer and participant. Active learning is the theme of this hands-on course. Students will explore music and develop musical literacy through activities such as world music drumming, introduction to guitar, singing and creating their own music. Students may also collaborate on unique music projects using web-based tools.

Strings 6   207000
`Elective`   This is a full-year elective which provides students with beginning instruction for violin, viola, cello, or bass. Students will learn the basic elements of music while developing the techniques and skills appropriate to an orchestral string instrument. Students will provide their own instruments through rental or purchase. Students need to attend Instrumental Clinic Registration Night to select an instrument. Students are required to practice daily outside school time. Participation in performance activities, such as winter and spring concerts is required.

Band 6   230000
`Elective`   This class is open to students who have an interest in learning to play the flute, clarinet, oboe, alto saxophone, bassoon, trumpet, French horn, trombone, euphonium/baritone, tuba, or percussion (snare drum/mallet instruments). Students provide their own instruments through rental or purchase. 5th grade students wishing to join band must attend an evening band clinic held at middle schools in the spring. During this clinic, students will meet with band directors and be evaluated individually on each of the band instruments. This is to ensure they are matched up with an instrument that best suits their natural physical embouchure characteristics and best guarantees their success. Students are required to practice daily outside school time and to participate in concerts and rehearsals after school hours.

Grade 7

English 7
Grade Level   102000
Honors   102200
`SOL Test` In Grade 7, oral language instruction focuses on nonverbal communication as well as on the interpretation of media sources. Reading skills practiced in 7th grade include comparing and contrasting forms, interpreting poems, distinguishing fact from opinion, and using print and electronic sources to locate information. By using roots and affixes and identifying word connotations, students continue to build their vocabulary.

Communication Studies   115400
Entire Year
This course introduces students to the basic principles of human communication, including interpersonal and small group, intercultural, and mediated (mass or electronic) communication and public speaking. Units of study focus on the communication process, qualities of competent communication, and the role of communication in developing relationships in a democracy. Emphasis will be on developing critical thinking skills and helping students develop their media literacy. This course is project-based; students will exhibit their learning through activities in publication (newspaper, yearbook, literary magazine), broadcast (radio, television, film), and/or public speaking (debate, drama).

Accelerating Literacy Skills   115600
Entire Year
Students read various texts (mostly self-selected) in order to increase reading speed, comprehension, and vocabulary knowledge. Students write in various modes in order to improve skills in organization, elaboration, sentence variety, word choice, and usage/mechanics. Writing-to-learn and speaking-to-learn are emphasized as methods of improving comprehension and exhibiting content/skill mastery.
Instruction is differentiated for each student's needs. Students who have gaps in language arts knowledge or skills receive instruction with increased rigor and intensity to move them toward grade level performance. Students performing at or above grade level will be guided toward improved performance.

Reading Strategies Workshop (Grade 7)   103600
Prerequisite: Schools identify students eligible for this program

This course is for students whose reading performance indicates a need to strengthen basic reading skills and strategies, as well as to help students to prepare for the SOL test. Instruction will focus on phonics, fluency, comprehension, critical thinking, vocabulary, reading engagement, viewing, and test-taking. It will be differentiated according to students' needs. The course will use materials that will assist students with reading in other courses.

Foundations of Algebra   514000

`SOL Test`   This course is designed to prepare students for Algebra I. It provides opportunities for students to apply problem solving and critical thinking as part of their mathematics studies. Topics include practical applications of rational numbers and proportional reasoning, geometry and measurement, algebraic equations, and data representation and interpretation. Mathematical communication and reasoning are emphasized throughout the course. Students completing this course will take the Grade 7 Mathematics SOL test.

Pre-Algebra   521000

`SOL Test`   This course extends concepts and skills from Foundations of Algebra and prepares students for abstract concepts in Algebra 1. Topics include equations, functions, algebraic applications of measurement and geometry, probability, and data analysis. Mathematical problem solving, critical thinking, communication and reasoning are emphasized throughout the course. Students completing this course will take the Grade 8 Mathematics SOL test.

Algebra I   540000
Prerequisite: Foundations of Algebra or Pre-Algebra   Credit: 1

`SOL Test` Algebra I incorporates concepts and skills necessary for students to pursue the study of rigorous advanced mathematics. The arithmetic properties of numbers are extended to include the development of the real number system. The fundamental concepts of equality, functions, multiple representations, probability, and data analysis guide the activities that allow students to enhance problem solving skills. Computers and graphing calculator technologies are incorporated into the curriculum in order to allow students opportunities to explore concepts, provide visual models to support the learning of algebraic concepts, and as powerful tools for solving and verifying solutions to equations and inequalities. Mathematical communication and reasoning emphasized throughout the course.

Life Science
Grade Level   620000
Honors   620200

Life Science is the study of the living world and biological systems. Areas of study include cellular organization and the classification of organisms; the dynamic relationships among organisms, populations, communities, and ecosystems; and change as a result of the transmission of genetic information from generation to generation. Inquiry skills at this level include organization and mathematical analysis of data, manipulation of variables in experimentation, and identifying sources of experimental error.

The Life Science course continues to focus on student growth in understanding the nature of science by defining the idea that explanations of nature are developed and tested using observation, experimentation, models, evidence, and systematic processes. The nature of science includes the concepts that scientific explanations are based on logical thinking; are subject to rules of evidence; are open to rational critique; and are subject to refinement and change with the addition of new scientific evidence.

U.S. History, 1865 to Present
Grade Level   720000
Honors   720200

Today you can send a text message to a friend in California in the amount of time it takes to turn on a light switch. If your great-grandparents wanted to send a written message to their friends in California when they were teenagers, it would have taken days for the mail train to deliver a paper letter. How has our country changed so much since the days of your great-grandparents? In this course students will learn how the United States changed from a farming economy in 1865 to a highly technical information society in 2018. As students learn about the transformation of our country from the Industrial Age to the "Information Age," they will strengthen their abilities to:

- Read text for content information
- Read and compare primary sources
- Read for the "point of view" of a document
- Understand cause-effect relationships
- Think critically
- Understand diverse cultural backgrounds

- Write with structure and purpose
- Participate in class discussion
- Develop their memory for, and appropriate usage of, Social Science vocabulary
- Apply geographical terms and concepts
- Interpret famous historical speeches

As students build skills in the areas listed above, they will develop regular, independent thinking habits in U.S. History. This means they will become "historical thinkers"!

Health and Physical Education 7   420000

Students are offered a variety of challenging activities with an emphasis on fitness for life. In middle school, health and physical education classes are offered every other day.

Students are exposed to instruction in anatomy and physiology, fitness planning, social development, and energy balance. In addition, a wide variety of activities including cooperative games, individual and dual sports, team sports, rhythmic activities, physical fitness testing, lifetime fitness, and recreational activities are offered. The 7th grade health curriculum expands upon previous instruction in diet and nutrition, stress and mental health, lifetime fitness and wellness, importance of sleep, heredity and illness, bullying, and the relationship of healthy body systems to overall wellness. Family Life Education (FLE) is also included in this course.

Family and Consumer Science 7   806700
One Semester

`Elective` This course emphasizes personal responsibility for the demands of multiple life roles through hands-on, project-based instruction. Students focus on individual development, maintain their personal environments, apply nutrition and wellness practices, manage consumer and family resources, create textile, fashion, and apparel products, and explore careers related to Family and Consumer Sciences such as child care. Instruction in this course emphasizes science, technology, engineering and mathematics (STEM) concepts, where appropriate.

Students enrolled in the course will be exposed to the Career Investigations Phase competencies.

Technology and Engineering Education 7   801700
One Semester

`Elective` Technology Education is a semester class that provides students opportunities to apply the design process to creatively solve problems. Students are introduced to the unit problem and are asked to make connections to the problem throughout the lessons in the unit. Students learn and utilize methods for communicating design ideas through sketches, solid models, and mathematical models. Students will understand how models can be simulated to represent an authentic situation and generate data for further analysis and observations. Students work in teams to identify design requirements, research the topic, and engage stakeholders.

Resource 7   002000

Students are assigned to a resource class every other day, occupying the same block as the selected music class.

During the class, students are able to take advantage of a variety of opportunities such as obtaining help from teachers, making up tests and assignments, selecting and participating in various enrichment and enhancement activities provided by the school, participating in school counseling classes such as study skills and time management, completing homework, researching topics and assignments, and participating in peer tutoring.

Spectrum 7   015000
Prerequisite: Students are found eligible through a multi-step screening process conducted by educational professionals in Loudoun County and are formally identified as gifted in terms of general intellectual ability.

The curriculum for 7th graders includes the following units:
- Business & Economics
- Technology & Engineering
- Communication & Culture
- Ethics & Perspectives

SOLs from various courses across the middle school curriculum are incorporated into instructional activities.

French I   340000
Prerequisite: None   Credit: 1
`Elective`   Students develop the ability to communicate about themselves and their immediate environment at the beginner-novice level, producing basic language structures in the French language. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

German I   370000
Prerequisite: None   Credit: 1
`Elective`   Students develop the ability to communicate about themselves and their immediate environment in German at the beginner-novice level by producing basic language structures. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

Latin I   350000
Prerequisite: None   Credit: 1
`Elective`   This course explores basic Latin grammar and vocabulary and develops the skills necessary to read elementary Latin texts. The linguistic nature of the course is supplemented by a general overview of Greco-Roman civilization, including history, daily life and mythology. English derivatives are emphasized to show the influence of Latin upon the English language and to contribute to the growth of each student's personal vocabulary.

The Spanish courses that follow are for students who wish to study Spanish as a second language. Spanish for Fluent Speakers is available for native/heritage Spanish speakers.

Spanish for Fluent Speakers I   367000
Prerequisite: Placement Test   Credit: 1
`Elective`   Spanish for Fluent Speakers I is designed to meet the needs of students whose primary language is Spanish and who have minimal or no formal instruction in the language. While developing their current competencies in formal speaking and listening, students focus on the acquisition of comparable competencies in reading and writing.

Upon successful completion of the course, students may continue in the Spanish for Fluent Speakers sequence.

Spanish I   360000
Prerequisite: None   Credit: 1
`Elective`   Students develop the ability to communicate about themselves and their immediate environment in Spanish at the beginner-novice level, producing basic language structures. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

Art 7   201700
`Elective`   Art 7 is a course that infuses art history, art criticism, and aesthetic critiques.

This course is designed to provide students with the opportunity to continue to develop a foundation of varied art skills, techniques, concepts and ideas beyond what is learned in the 6th grade program. Learning experiences will be connected to the real world, allowing students to understand how art relates to everything around us.

Students will continue to discuss and write about their art work and that of other artists. Also, students will establish a continuing art portfolio.

Band 7   231000
Prerequisite: Successful completion of Band 6 or equivalent study and experience.
`Elective`   Students enrolled in this class will continue learning and developing the fundamental skills of playing a band instrument with an increased emphasis on ensemble performances. Students provide their own instruments.

Students are required to practice daily and participate in concerts, festivals, and rehearsals outside school hours. Instruments include: Percussion, clarinet, trumpet, flute/oboe, low brass, and saxophone.

Chorus 7 — 236000
Elective This class is open to all students with a strong desire to sing and requires no audition. Students will apply the basics of proper singing techniques while performing a variety of styles of unison, two- and three-part choral music. Music reading skills are emphasized in this class and students will develop choral literacy by singing literature that is sacred and secular. Students are required to attend several concerts and rehearsals held after school hours.

Guitar 7 — 208000
Elective 7th Grade Guitar is open to all students. The nylon-stringed classical guitar is used to introduce students to proper guitar technique, sitting position, standard music notation, tablature, chord charts, music theory and history, and solo and ensemble playing in a variety of musical styles. Care and proper maintenance of the instrument is also emphasized.

Participation in 7th Grade Guitar Level 1 class may require after-school performance with rehearsals.

Strings 7 — 207100
Prerequisite: Successful completion of Strings 6 or equivalent study and experience
Elective This is a full-year elective which provides instruction for violin, viola, cello, or bass students. Students enrolled in this class will continue to develop fundamental performance skills introduced in Strings 6 with an increased focus on ensemble playing. Students are required to practice daily outside school and to participate in concerts and rehearsals after school hours. Students will provide their own instruments.

Exploratory Dramatics — 201100
Elective Exploratory Dramatics will provide students with an introduction to the study of performance, theatre history, dramatic literature and theatrical production. Through research, planning, scripting, production and performance experiences, students will acquire skills in communicating ideas, critical thinking and collaborative problem solving. This course prepares students for further theatrical study in high school. This course may not be offered at all schools.

CAMS – Coding at Middle School — 527000
Elective CAMS is an introduction to computer science which integrates mathematics concepts, focusing on problem solving. Students will create and share their own interactive stories, animations, games, music, and art. Students will develop programming projects in which they learn skills that are critical to future success: thinking creatively, communicating clearly, analyzing systematically, using technologies fluently, collaborating effectively, designing interactively, and learning continuously. Scratch and other programming languages will be used in this course.

Grade 8

English 8
Grade Level — 120000
Honors — 120200
SOL Test In Grade 8, interviewing techniques are the distinct focus of 8th grade oral language skills. Reading instruction emphasizes the ability to compare and contract authors' styles, and to analyze an author's credentials, viewpoint, and impact. Students continue to grow as writers in their development of work in multiple genres by practicing the use of conjunctions and transition words and by using the comparative and superlative degrees of adverbs. Students develop vocabulary through their study of analogies and other forms of figurative speech.

Communication Studies — 115400
Entire Year
This course introduces students to the basic principles of human communication, including interpersonal and small group, intercultural, and mediated (mass or electronic) communication and public speaking. Units of study focus on the communication process, qualities of competent communication, and the role of communication in developing relationships in a democracy. Emphasis will be on developing critical thinking skills and helping students develop their media literacy. This course is project-based; students will exhibit their learning through activities in publication (newspaper, yearbook, literary magazine), broadcast (radio, television, film), and/or public speaking (debate, drama).

Pre-Algebra 521000
`SOL Test`   This course extends concepts and skills from Foundations of Algebra and prepares students for abstract concepts in Algebra 1. Topics include equations, functions, algebraic applications of measurement and geometry, probability, and data analysis. Mathematical problem solving, critical thinking, communication and reasoning are emphasized throughout the course. Students completing this course will take the Grade 8 Mathematics SOL test.

Algebra I 540000
Prerequisite: Successful completion of Foundations of Algebra or Pre-Algebra Credit: 1
`SOL Test` Algebra I incorporates concepts and skills necessary for students to pursue the study of rigorous advanced mathematics. The arithmetic properties of numbers are extended to include the development of the real number system. The fundamental concepts of equality, functions, multiple representations, probability, and data analysis guide the activities that allow students to enhance problem solving skills. Computers and graphing calculator technologies are incorporated into the curriculum in order to allow students opportunities to explore concepts, provide visual models to support the learning of algebraic concepts, and as powerful tools for solving and verifying solutions to equations and inequalities. Mathematical communication and reasoning emphasized throughout the course.

Geometry 550000
Prerequisite: Algebra I Credit: 1
`SOL Test` Geometry is the combined study of plane, solid, and coordinate geometric concepts which provides students with the skills necessary for the study of advanced mathematics. Investigations of lines, planes, congruence, similarity, areas, volumes, circles, and three-dimensional shapes are incorporated to provide a complete course of study. Formal and informal deductive reasoning skills are developed and applied to the construction of formal proofs. And emphasis on reasoning, problem solving, and proof is embedded in the course and includes two-column proofs, paragraph proofs, and coordinate proofs. Computers and graphing calculator technologies are incorporated into the curriculum to allow students opportunities to explore concepts, engage in inquiry-based learning, provide visual models to support the learning of geometric concepts, and as powerful tools for solving and verifying solutions to equations and inequalities. Mathematical communication and reasoning are emphasized throughout the course.

Physical Science
Grade Level 630000
Honors 630200
`SOL Test` Physical Science is the study of matter and the characteristics of energy. Areas of study include atomic structure, the organization and use of the periodic table, physical and chemical changes, forms of energy and energy transformations, heat and heat transfer, sound and light and their technical applications, principles and applications of work, force, and motion, magnetism, and principles of electricity.

The Physical Science course continues to focus on student growth in understanding the nature of science by defining the idea that explanations of nature are developed and tested using observation, experimentation models, evidence, and systematic processes.

The nature of science includes the concepts that scientific explanations are based on logical thinking, are subject to rules of evidence, are open to rational critique, and are subject to refinement and change with the addition of new scientific evidence.

Civics and Economics
Grade Level 730000
Honors 730200
What rights do you have here in the United States? What rights do you have as a student? In this course, students will discover what they can do as a resident of our country, and what our country relies on them to do as they grow into adulthood. Students will also learn answers to economic questions, such as "Why does a new X-Box system go down in price as time passes?" As students learn about the important questions in their lives as residents and consumers in the United States, they will develop their abilities to:

- Read text for content information
- Read and compare primary sources
- Read for the "point of view" of a document and differentiate fact from opinion
- Understand cause-effect relationships and identify potential solutions to problems
- Think critically
- Understand diverse cultural backgrounds

- Write with structure and purpose
- Participate in class discussion
- Develop their memory for, and appropriate usage of, Social Science vocabulary
- Apply knowledge of geography to economic or political maps
- Interpret charts, graphs, political cartoons and maps

As students work to make the skills above part of their regular performance in Civics and Economics, they will be building their abilities to be active members of their community and smarter consumers in our economy!

Health and Physical Education 8   430000

      Students are offered a variety of challenging activities with an emphasis on fitness for life. In middle school, health and physical education classes are offered every other day.

      Students are exposed to instruction in anatomy and physiology, fitness planning, social development, and energy balance. In addition, a wide variety of activities including cooperative games, individual and dual sports, team sports, rhythmic activities, physical fitness testing, lifetime fitness, and recreational activities are taught. The 8th grade health curriculum expands on topics previously covered, and also includes lifetime fitness and wellness, alcohol, tobacco and other drugs, weight management, eating disorders, depression and suicide, SMART goals, and the impact of exercise and diet on the body. Family Life Education (FLE) is also included in this course.

Resource 8   001000
Full Year

      During the class, students are able to take advantage of a variety of opportunities such as obtaining help from teachers, making up tests and assignments, selecting and participating in various enrichment and enhancement activities provided by the school, participating in school counseling classes such as study skills and time management, completing homework, researching topics and assignments, and participating in peer tutoring.

Spectrum 8   010700
Prerequisite: Students are found eligible through a multi-step screening process conducted by educational professionals in Loudoun County and are formally identified as gifted in terms of general intellectual ability.

      The curriculum for 7th graders includes the following units:

- Business & Economics
- Technology & Engineering
- Communication & Culture
- Ethics & Perspectives

      SOLs from various courses across the middle school curriculum are incorporated into instructional activities.

French I   340000
Prerequisite: None   Credit: 1

`Elective` Students develop the ability to communicate about themselves and their immediate environment at the beginner-novice level, producing basic language structures in the French language. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

French II   342000
Prerequisite: French I   Credit: 1

`Elective` Students continue to develop proficiency in French at the intermediate-novice level in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing. Students learn to function in real-life situations using more complex sentences and language structures. They also read material on familiar topics and produce short writing samples.

German I   370000
Prerequisite: None   Credit: 1

`Elective` Students develop the ability to communicate about themselves and their immediate environment in German at the beginner-novice level by producing basic language structures. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

German II   372000
Prerequisite: German I   Credit: 1

`Elective` Students continue to develop proficiency in German at the intermediate-novice level in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing. Students learn to function in real-life situations using more complex sentences and language structures. They also read material on familiar topics and produce short writing samples.

Latin I   350000
Prerequisite: None   Credit: 1

`Elective` This course explores basic Latin grammar and vocabulary and develops the skills necessary to read elementary Latin texts. The linguistic nature of the course is supplemented by a general overview of Greco-Roman civilization, including history, daily life and mythology. English derivatives are emphasized to show the influence of Latin upon the English language and to contribute to the growth of each student's personal vocabulary.

Latin II   352000
Prerequisite: Latin I   Credit: 1
`Elective`   Students review material from Latin I, learn intermediate grammar and vocabulary, and continue to develop skills necessary to read Latin texts. They expand their understanding of Greco-Roman civilization and English derivatives.

The Spanish courses that follow are for students who wish to study Spanish as a second language. Spanish for Fluent Speakers is available for native/heritage Spanish speakers.

Spanish for Fluent Speakers I   367000
Prerequisite: Placement Test   Credit: 1
`Elective`   Spanish for Fluent Speakers I is designed to meet the needs of students whose primary language is Spanish and who have minimal or no formal instruction in the language. While developing their current competencies in formal speaking and listening, students focus on the acquisition of comparable competencies in reading and writing. Upon successful completion of the course, students may continue in the Spanish for Fluent Speakers sequence.

Spanish for Fluent Speakers II   367300
Prerequisite: Spanish for Fluent Speakers I or Placement Test   Credit: 1
`Elective`   Spanish for Fluent Speakers II is designed to increase proficiency in reading and writing of students whose primary language is Spanish. Major grammar points are reviewed and finer points of grammar are studied, placing emphasis on style and structural accuracy. Comprehension and communication skills are refined through the reading and discussion of selections written by classic and modern authors in a variety of genres. Upon successful completion of this course, students may continue in the Spanish for Fluent Speakers series.

Spanish I   360000
Prerequisite: None   Credit: 1
`Elective`   Students develop the ability to communicate about themselves and their immediate environment in Spanish at the beginner-novice level, producing basic language structures. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

Spanish II   362000
Prerequisite: Spanish I   Credit: 1
`Elective`   Students continue to develop proficiency in Spanish at the intermediate-novice level in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing. Students learn to function in real-life situations using more complex sentences and language structures. They also read material on familiar topics and produce short writing samples.

Art 8
One Semester   202700
Full Year   202000
`Elective`   Art is an elective course, which can be taken for one semester or a full year. 8th grade art infuses art production, art history, art criticism, and aesthetic critiques. Students engage in the process of creating, presenting, responding, and connecting with their art and the work of others. The course is designed to provide students with the opportunity to hone technical skills, develop their own personal vision and ideas while experiencing more depth within a broad range of media. Students continue to develop their art portfolios to communicate the creative process.

Art 8 Three-Dimensional Design   203000
`Elective`   This course is designed to allow 8th grade art students the opportunity to explore three-dimensional art through the creative process using the elements and principles of design. Students will initiate and develop innovative ideas as they explore multi-media forms while applying depth, space, volume, and surface in an integrative way. Various experiences will provide students with hands-on creative challenges to discover sculpture, architecture, ceramics, and assemblage. Collaborative experiences will allow students unique opportunities to possibly create a 3D installation for the school and/or community. Art students will develop a continuing 3D Design portfolio.

Chorus 8   237000
Prerequisite: Successful completion of Chorus 7 recommended, not required
`Elective`   Chorus 8 is a performance-oriented class. Sight Singing skills are stressed as well as an emphasis on proper vocal techniques. Students will develop choral literacy by singing literature that is sacred and secular.
        Students are required to participate in concerts, festivals, and rehearsals held outside school hours.

Exploratory Dramatics   201100
`Elective`   Exploratory Dramatics will provide students with an introduction to the study of performance, theatre history, dramatic literature and theatrical production. Through research, planning, scripting, production and performance experiences, students will acquire skills in communicating ideas, critical thinking and collaborative problem solving. This course prepares students for further theatrical study in high school.

Band 8   232000
Prerequisite: Successful completion of Band 7 or equivalent study and experience
`Elective`   Band 8 provides students the opportunity to continue to build their musical skills in preparation for performance at high school level. There is a continued emphasis on development of performance techniques, sight reading skills, ensemble playing, and a more difficult and varied repertoire.
  Students are required to practice daily and to participate in concerts, festivals, and rehearsals held outside school hours.

Strings 8   207003
Prerequisite: Successful completion of Strings 7 or equivalent study and experience
`Elective`   Strings 8 provides students the opportunity to continue to build their musical skills in preparation for performance at the high school level. There is a continued emphasis on performance techniques, sight reading skills, ensemble playing, and a more difficult and varied repertoire.
  Students are required to practice daily and to participate in concerts, festivals, and rehearsals held outside school hours. Students will provide their own instruments.

Guitar 8 – Level 1   210000
`Elective`   8th Grade guitar – Level 1 is open to all students. The nylon-stringed classical guitar is used to introduce students to proper guitar techniques, sitting position, standard music notation, tablature, chord charts, music theory and history, and solo and ensemble playing in a variety of musical styles. Care and maintenance of the instrument are emphasized as well.
  Participation in this class may require after-school performance with rehearsals.

Guitar 8 – Level 2   209000
Prerequisite: Successful completion of Guitar 7 or equivalent study and experience
`Elective`   This course begins with a review of skills and concepts introduced in 7th Grade Guitar. Greater emphasis is placed on elements of guitar technique including scales, arpeggios, slurs, stretches, and the establishment of a regular practice routine. The nylon-stringed classical guitar is used.
  Students perform increasingly complex ensemble and solo repertoire. Participating in 8th Grade Guitar – Level 2 may require after-school performances with rehearsals.

AVID MS   096000
Available at JLS, SMM, SRM and STM Only
`Elective`   This course is the foundational component of the AVID College Readiness System. This course emphasizes communication skills, educational self-advocacy, study skills and physical organization within agenda/planner, organizational tools, time management, goal setting, and note-taking strategies. These skills are practiced through writing to learn, inquiry, collaboration, organization, and reading to learn activities in all content areas.

Reading Strategies Workshop Grade 8   105600
Prerequisite: Schools identify students eligible for this program
  This course is for students whose reading performance indicates a need to strengthen basic reading skills and strategies, as well as to help students to prepare for the SOL tests. Instruction will focus on phonics, fluency, comprehension, critical thinking, vocabulary, reading engagement, viewing, and test-taking. It will be differentiated according to students' needs. The course will use materials that will assist students with reading in other courses.

Family and Consumer Science 8   807000
`Elective`   Family and Consumer Science 8 is an elective course that can be taken for a full year. The focus is on improving self-identity, sharpening communication and social skills, increasing academic achievement, managing resources, and becoming oriented to the world of work.
  Through a practical problem-solving approach, students learn to critically examine concerns, seek solutions, and solve problems in caring ways. Various concepts explored in Family and Consumer Science 7 will be expanded for in-depth study. Leadership skills are integrated in the curriculum through FCCLA (Family, Career, and Community Leaders of America).
  Lab Fee: $20.00

Introduction to Teacher Cadet 843000
Grade(s): 8
`Elective`   This exploratory course fosters student interest, understanding, and appreciation of the teaching profession and allows students an introduction to careers in education. Students are taught to develop self-awareness, collaborate and communicate with peers, build positive learning environments, and discover learning differences of others. The curriculum is designed to help students set attainable goals in the Education and Training Career Cluster. *This course is piloted at certain schools*.

Technology Education 8 802000
`Elective`   Technology Education is an elective course which can be taken for a full year. It is a comprehensive class using a multimedia and modular technology education approach. Students will experiment, design, invent, create, build, test, and analyze while exploring 14 different technology areas.
        This course helps students understand how knowledge, tools and resources work in technological systems and benefit society. By simulating systems and assessing their impacts and influences on people, students gain insight into how to approach the problems and opportunities of the technological world.
        Lab Fee: $20.00

Technology of Robotic Design 803000
Grade(s): 8 **Credit: 1**
`Elective`   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.
        Lab Fee: $10.00

CAMS – Coding at Middle School 527000
`Elective`   CAMS is an introduction to computer science which integrates mathematics concepts, focusing on problem solving. Students will create and share their own interactive stories, animations, games, music, and art. Students will develop programming projects in which they learn skills that are critical to future success: thinking creatively, communicating clearly, analyzing systematically, using technologies fluently, collaborating effectively, designing interactively, and learning continuously. Scratch and other programming languages will be used in this course.

English Learners

Special programs of instruction are available for students who have been identified as English Learners (EL) in all middle schools. When students enroll in Loudoun County Public Schools they are asked several home language questions on the student registration form. If a language other than English is indicated in any of these responses, an English language proficiency test is administered by a trained assessor. The test helps determine the student's proficiency level. Each student's placement is determined on an individualized basis. Factors that should be considered before determining course placement include, but are not limited to:

- Proficiency Level
- Prior educational experience
- Student transcripts

Newcomer English, MS Grades 6-8 100011
(Entering and Beginning Level)
        (Proficiency Level 1.0 – 1.9) EL students learn English vocabulary, grammar, and sentence structure to assist them in the development of academic, cultural, and life skills. Students will develop their literacy skills through a variety of reading and writing activities while exploring various text types including fiction and non-fiction. All four language domains – listening, speaking, reading, and writing – are incorporated in order to support students' acquisition of academic English.

EL Intermediate English, MS Grades 6-8   100012
(Developing Level)

Students at this level (Proficiency Level 2.0 – 3.0) will study academic vocabulary and reading strategies that will prepare them for content area classes. Students will deepen their English language and literacy skills using a variety of fiction and non-fiction novels. All four language domains – listening, speaking, reading, and writing – are incorporated in order to support students' acquisition of academic English.

Newcomer Science Concepts, MS Grades 6-8   610010
(Beginning and Developing Levels)

In this course, EL students (Proficiency Level 1.0 – 1.9) learn the language of science along with key concepts of the grade-level science curricula, including general science theory, earth science, and biology. The Newcomer EL Science Concepts course can be taken concurrently with a grade-level science course to provide additional support for ELs. This course is most appropriate for students at low levels of English proficiency who possess limited background in science and/or have had limited or interrupted prior schooling.

Newcomer History MS   771300
Grades 6-8

In this course, Newcomer EL students (Proficiency Level 1.0 – 1.9) learn the language of social science along with key concepts of the grade-level social science curricula, including World History and United States and Virginia History. The EL Social Science Concepts course can be taken concurrently with a grade-level social science course to provide additional support for ELs. This course is most appropriate for students at low levels of English proficiency who possess limited background in social science and/or have had limited or interrupted prior schooling.

EL U.S. History/Geography Concepts I, Grade 6   710010

This course for EL students (Proficiency Level 1.5 – 2.5) focuses on American History from the Era of Exploration to the Civil War. The course includes geography, history, civics, and culture. Students learn about topics such as landforms, colonies, westward expansion, and inventions. Students learn English using social science topics to read, write, and enter into discussions about U.S. History. Reading strategies and the vocabulary of social science are taught to prepare students for success later in Social Science classes.

EL U.S. History Concepts II, Grade 7   720010

In this course for EL students (Proficiency Level 1.5 – 2.5), the study of U.S. history continues from the end of the Civil War and the Era of Reconstruction to the 21st Century. Topics in the course include Reconstruction, Industrialization, the World Wars, and 21st Century social changes. Students continue to learn English using social science topics to read, write, and enter into discussions about U.S. history. There are many opportunities to use library and computer skills to create exciting projects and presentations. Reading strategies and the vocabulary of social science are taught to prepare students for success as they transition into Social Science classes.

EL Civics and Economics Concepts, Grade 8   730010

In this course (Proficiency Level 1.5 – 2.5), students learn about U.S. Government, politics in the U.S., and citizens' responsibilities. The course includes topics such as the U.S. Constitution, political parties, voting rights, the branches of government, and economic systems. ELs study the vocabulary of civics and economics and are able to use their new vocabulary to enter discussions offered in this class. Students learn about the U.S. Government and improve their academic reading and writing skills.

Newcomer Math MS   531000

In this course, recently arrived EL students (proficiency level 1.0 – 2.5) learn the language of mathematics along with key concepts of the grade-level mathematics curricula of math 6 – 8. The newcomer EL course can be taken concurrently with a grade level mathematics course to provide additional support for EL students.

High School Course Descriptions

Grades 9 - 12

Career and Technical Education

Website:
www.lcps.org/cte

CTE Course Offerings by High School

@LCPSCTE

Business and Information Technology

Summary: Through the Business and Information Technology program, students are provided opportunities to complement their academic preparation while exploring a variety of careers and learning skills and concepts in the areas of computer applications; finance and accounting; business law and management; app development; cybersecurity; design, multimedia and web technologies; and principles of business and marketing.
Career and Technical Education Student Organization (CTSO): Future Business Leaders of America (FBLA)
Student Industry Certifications: Microsoft Office Specialist, Microsoft Office Expert, W!se Financial Literacy and Workplace Readiness Skills

Family and Consumer Sciences

Summary: Family and Consumer Sciences courses facilitate student progress toward a set of unifying goals in the areas of academic achievement, cultural and environmental issues, health and safety, individual and family relations, leadership and workplace ethics, and application of technology.
Career and Technical Education Student Organization (CTSO): Family, Career and Community Leaders of America (FCCLA) and Educators Rising
Student Industry Certifications: ParaPro, Praxis, and Workplace Readiness Skills

Marketing Education

Summary: Marketing programs prepare students for postsecondary education and careers in marketing, finance, hospitality, management and entrepreneurship.
Career and Technical Education Student Organization (CTSO): DECA
Student Industry Certifications: IC3 Global Standard (GS3), NRF Customer Service and Sales, NRF Advanced Customer Service and Sales, and Workplace Readiness Skills

Technology and Engineering Education

Summary: The technology education program provides students to take courses to prepare them for technical or professional programs of higher education, such as STEM careers, engineering or architecture.
Career and Technical Education Student Organization (CTSO): Technology Student Association (TSA)
Student Industry Certifications: Autodesk and Workplace Readiness Skills

Business and Information Technology

Accounting 830000
Grade(s): 10-12 Credit: 1
Prerequisite: None

In this course, 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.

This course counts as an elective credit.

Advanced Accounting 831000
Grades(s): 11-12 Credit: 1
Prerequisite: Accounting

This advanced course allows students to gain knowledge of advanced accounting principles, procedures, and techniques used to solve business problems and to make financial decisions. Students use accounting and spreadsheet software to analyze, synthesize, evaluate, and interpret business financial data. Students work in a technology-integrated environment using authentic workplace industry scenarios that reflect current industry trends and standards. Upon completion, students should be able to demonstrate an understanding of the principles of decision making, problem solving, and critical thinking, and apply them to both personal and business financial situations.

This course counts as an elective credit.

Advanced Computer Information Systems 828002
Grade(s): 10-12 Credit: 1
Prerequisite: Computer Information Systems

This advanced course provides students with basic comprehension of the Microsoft Office software package and an opportunity to refine their skills through a variety of project and research activities. Students apply problem-solving skills to real-life situations through advanced integrated software applications, including printed, electronic, and web publications. Students work individually and in groups to explore advanced computer maintenance activities, website development, programming, networking, emerging technology, and employability skills. Students may also become eligible to test for the expert level of Microsoft Office Specialist certification.

This course counts as an elective credit.

Advanced Design, Multimedia and Web Technologies 839002
Grade(s): 11-12 Credit: 1
Prerequisite: Design, Multimedia, and Web Technologies

This advanced course provides project-based instruction to enhance the design and multimedia skills of students. Topics covered include designing, creating, and publishing websites; complying with laws and professional ethics; and relating design and multimedia application to business and industry standards. Students may also become eligible to test for the expert level of Microsoft Office Specialist certification.

This course counts as an elective credit.

App Development I 828500
Grade(s): 11-12 Credit: 1
Prerequisite: Cybersecurity Software Operations, recommended

Students in the Programming course explore programming concepts, use algorithmic procedures, implement programming procedures with one of more standard languages, and master programming fundamentals. Coding is used throughout the course. Graphical user interfaces may be used as students design and develop interactive multimedia applications, including game programs. In addition, students employ HTML or JavaScript to create Web pages. Students develop their employability skills through a variety of activities. Using Python® as a primary tool and incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration. App Development I helps students develop programming expertise and explore the workings of the internet. Projects and problems include app development, visualization of data, cybersecurity, and simulation.

This course counts as an elective credit.

Business Law SEM
835700

Grade(s): 10-12   Credit: 0.5

Prerequisite: None

In this semester course, students examine the foundations of the American legal system and learn the rights and responsibilities of citizens. Students gain practical knowledge and life skills by exploring economic and social concepts related to laws governing business and individuals. Focus areas include contracts, consumer protection, criminal law, tort law, international law, family/domestic law, employment law, and careers in the legal profession.

This course counts as an elective credit.

Business Management SEM
836700

Grade(s): 10-12   Credit: 0.5

Prerequisite: None

In this semester course, 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 work-based learning opportunities and the Future Business Leaders of America (FBLA).

This course counts as an elective credit.

Computer Information Systems
828001

Grade(s): 9-12   Credit: 1

Prerequisite: Keyboarding Proficiency

Computer Information Systems provides students with opportunities to develop professional level skills in a project-oriented approach through the use of the Microsoft Office software package. 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. Students may also become eligible to test for the core level of Microsoft Office Specialist certification.

This course counts as an elective credit.

Cybersecurity Software Operations
894103

Grade(s): 10-12   Credit: 1

Prerequisite: Introduction to Cybersecurity

Cybersecurity Software Operations is designed to teach many aspects of computer support and network administration. Students learn networking concepts, from usage to components, and create peer-to-peer network systems and client server networks. Students learn how to install and configure network cards and connect them to networks; to install the operating systems; to create, set up, and manage accounts; to load software; and to establish, implement, and maintain network integrity security plans. This course may cover software-based network operating systems, such as Windows Server or Linux, to prepare students with a foundation in computer network administration.

This course counts as an elective credit.

Design, Multimedia and Web Technologies
839001

Grade(s): 10-12   Credit: 1

Prerequisite: Computer Information Systems, recommended

Students develop proficiency in creating desktop publications, multimedia presentations/projects, and websites using industry standard application software. Students incorporate principles of layout and design in completing publications and projects. Students design portfolios that may include business cards, newsletters, mini-pages, web pages, multimedia presentations/projects, calendars, and graphics.

This course counts as an elective credit.

Economics and Personal Finance
Virtual Loudoun

823V00

Grade(s): Rising 9-12   Credit: 1

Prerequisite: None

Students will learn how to navigate the financial decisions they must face and to make informed decisions related to career exploration, budgeting, banking, credit, insurance, spending, taxes, saving, investing, buying/leasing a vehicle, living independently, and inheritance. Development of financial literacy skills and an understanding of economic principles provide the basis for responsible citizenship and career success. In addition to developing personal finance skills, students in the 36-week online course also study basic occupational skills and concepts in preparation for entry-level employment in the field of finance.

This course will be taught during the regular school day with an assigned teacher-facilitator. This course incorporates all economic and financial literacy objectives included in the *Code of Virginia* §22.1-200-03B. This 36-week course is a graduation requirement.

This course counts as an elective credit.

Introduction to Business & Marketing
Grade(s): 9-11
Prerequisite: None

821000
Credit: 1

This entry-level course is offered for all students and recommended as an introduction to the career preparation program in Business & Marketing Education. Students explore the role of business and marketing in the free enterprise system and the global economy and apply decision-making skills as consumers, employees, and citizens. Communication and interpersonal skills are developed through various activities.

This course counts as an elective credit.

Introduction to Cybersecurity
Grade(s): 9-11
Prerequisite: None

894101
Credit: 1

Cybersecurity affects every individual, organization, and nation. This course focuses on the evolving and all-pervasive technological environment with an emphasis on securing personal, organizational, and national information. Students will be introduced to the principles of cybersecurity, explore emerging technologies, examine threats and protective measures, and investigate the diverse high-skill, high-wage, and high-demand career opportunities in the field of cybersecurity.

This course counts as an elective credit.

Personal Finance
Grade(s): 10-12
Prerequisite: None

825000
Credit: 0.5

Students learn how to navigate the financial decisions they must face and to make informed decisions related to career exploration, budgeting, banking, credit, insurance, spending, taxes, saving, investing, buying/leasing a vehicle, living independently, and inheritance. Development of financial literacy skills and an understanding of economic principles provide the basis for responsible citizenship and career success. In addition to developing personal finance skills, students also study basic occupational skills and concepts in preparation for entry-level employment in the field of finance. The course incorporates all economic and financial literacy objectives included in the Code of Virginia §22.1-200-03B. This semester course is a graduation requirement beginning with the class of 2015.

This course counts as an elective credit.

Family and Consumer Sciences

Early Childhood Education I
Grade(s): 10-12
Prerequisite: Human Development SEM, recommended; Intro to Early Childhood Education, recommended; TB test, required

844100
Credit: 2

This is a hybrid course that involves traditional face-to-face learning and virtual/online learning through VISION. Students prepare to be primary providers of home-, family-, or institution-based child care services by focusing on the planning, organizing, and conducting of meaningful play and learning activities; child monitoring and supervision; record keeping; and referral procedures. Critical thinking, practical problem solving and entrepreneurship opportunities within the field of early childhood education are emphasized. Practical experiences, (e.g., on-site lab, local daycare centers, elementary schools, other institutions) under the supervision of the instructor are required. Students also prepare for continuing education leading to careers in early childhood fields (e.g., medical social services and education). Work-based learning methods of instruction are encouraged for this course. Students combine classroom instruction and supervised on-the-job training in an approved position with continuing supervision throughout the school year.

Proof of tuberculosis (TB) screening is required. Students are responsible for getting TB screening prior to the start of the school year. https://law.lis.virginia.gov/vacode/title22.1/chapter15/section22.1-300/

This course counts as an elective credit.

Early Childhood Education Seminar I DE   844306
Grade(s): 10-12   Credit: 2
Prerequisite: Human Development SEM is recommended; TB test is required
     This is a hybrid course that involves traditional face-to-face learning and virtual/online learning through VISION. This course presents early childhood development through activities and experiences in early childhood, prekindergarten, kindergarten, and primary programs. Students investigate classroom organization and procedures, and use of classroom time and materials, approaches to education for young children, professionalism, and curricular procedures. Students will describe and illustrate theoretical and historical bases of early childhood education, classify and interpret developmental characteristics of young children from infancy through age eight, classify and critique characteristics of developmentally appropriate materials and activities, identify and explain basic health, safety, and nutritional needs of children and apply appropriate learning standards as they relate to early childhood education. Students gain real-world experience in an assigned early childhood education facility. Proof of tuberculosis (TB) screening is required. Students are responsible for getting TB screening prior to the start of the school year. https://law.lis.virginia.gov/vacode/title22.1/chapter15/section22.1-300/
     This course counts as an elective credit.

Early Childhood Education II   844200
Grade(s): 11-12   Credit: 2
Prerequisite: Early Childhood Education I; TB test is required
     This is a hybrid course that involves traditional face-to-face learning and virtual/online learning through VISION. Students focus on occupational skills needed by personnel employed in early childhood related fields such as education, medical/health care, social services, counseling, psychology, and entrepreneurship. Work-based learning experiences (e.g., on-site lab, local daycare centers, elementary schools, other institutions) under the supervision of the instructor are required. Critical thinking, practical problem solving and entrepreneurship opportunities within the field of early childhood education are emphasized. Work-based learning methods of instruction are encouraged for this course. Students combine classroom instruction and supervised on-the-job training in an approved position with continuing supervision throughout the school year.
     Proof of tuberculosis (TB) screening is required. Students are responsible for getting TB screening prior to the start of the school year. https://law.lis.virginia.gov/vacode/title22.1/chapter15/section22.1-300/
     This course counts as an elective credit.

Early Childhood Education Seminar II DE   844406
Grade(s): 11-12   Credit: 2
Prerequisite: Early Childhood Education Seminar I DE; TB Test is required
     This course focuses on observation as the primary method for gathering information about children in early childhood. Students focus on occupational skills needed by personnel employed in early childhood-related careers. Work-based learning experiences in on-site labs, early childhood development centers, elementary schools, and other institutions under the supervision of the instructor are required. Upon successful completion of the course, students will be eligible to take the ParaPro credential exam. Proof of tuberculosis (TB) testing is required. Students are responsible for getting TB testing prior to the start of the school year.
     Proof of tuberculosis (TB) screening is required. Students are responsible for getting TB screening prior to the start of the school year. https://law.lis.virginia.gov/vacode/title22.1/chapter15/section22.1-300/
     This course is piloted in select schools.

Fashion Design & Merchandising SEM   846700
Grade(s): 9-12   Credit: 0.5
Prerequisite: None
     Wardrobe planning, selection, color analysis, accessorizing, fashion design, and clothing maintenance are emphasized in the management of personal and family clothing. Fashion trends are analyzed. Based on their abilities and interests, students construct various fashion projects for which students must provide materials.
     This course counts as an elective credit.

Fashion Careers I   846100
Grade(s): 10-11   Credit: 2
Prerequisite: Fashion Design & Merchandising is recommended
     This is a double-blocked course. Students investigate career opportunities in apparel design, production, and care. Students study the business of fashion, including fabric technology, fashion design skills, and apparel-production techniques. Work-based learning opportunities for students to develop employability skills. Teachers emphasize skills in art, communication, mathematics, science and technology in this course.
     This course counts as an elective credit.

Food Science and Dietetics   845200
Grade(s): 11-12   Credit: 1
Co/Prerequisite: Chemistry

       Through laboratory and other practical experiences, students will develop a deeper appreciation for the food system and the impact of science on the food and nutrition industries. Students will explore the food sources; the science and technology of food production and processing; and implications for individual and global health and wellness. Career opportunities are broad and include health care, dietetics, and food research, development, and manufacturing.

       This course counts as an elective credit.

Gourmet Foods SEM   845700
Grade(s): 9-12   Credit: 0.5
Gourmet Foods   845100
Grade(s): 9-12   Credit: 1
Prerequisite: None

       The application of science concepts in biology, chemistry, and physics are important to the study of foods. Students learn the relationship of science to foods, use of technology, nutrition, wellness, sports nutrition, food safety, and sanitation, time and resource management, foods and cultural diversity, contemporary trends and issues, and the use of the My Plate guide. Hands-on activities in food preparation skills and techniques and in the actual planning, preparation, preservation, and serving of nutritious meals encourage the development of positive interdependence, individual accountability, social skills, and effective group functioning. Students use computers to analyze nutritional content of foods and to plan for special dietary needs.

       This course counts as an elective credit.
       Lab Fee: $20.00 Semester, $40.00 Full Year

Human Development SEM   846000
Grade(s): 9-12   Credit: 0.5
Prerequisite: None

       Students enrolled in Human Development focus on analyzing parenting roles and responsibilities, ensuring a healthy start for mother and child, evaluating support systems that provide services for parents, and evaluating parenting practices that maximize human growth and development. Critical thinking, practical problem-solving using case studies, and entrepreneurship opportunities within the area of parenting responsibilities and child development are emphasized. Teachers highlight the basic skills of mathematics, science, and technology when appropriate.

       This course counts as an elective credit.

Independent Living SEM   840700
Grade(s): 9-12   Credit: 0.5
Prerequisite: None

       Whether students choose to enter the work force or continue their education after high school, they must acquire the life skills necessary to make the transition to independent living. Students become empowered to make responsible consumer choices by applying decision making, problem solving, and management processes; to see themselves in the roles of making and managing money; to calculate value for food, clothing, and housing dollars; and to apply the resources of time, materials, and technology for successful living.

       This course counts as an elective credit.

Introduction to Culinary Arts   875101
Grade(s): 9-11   Credit: 1
Prerequisite: None

       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 cuisine 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.

       This course counts as an elective credit.
       Lab Fee: $40.00

Introduction to Cybersecurity   894101
Grade(s): 9-11   Credit: 1
Prerequisite: None

       Cybersecurity affects every individual, organization, and nation. This course focuses on the evolving and all-pervasive technological environment with an emphasis on securing personal, organizational, and national information. Students will be introduced to the principles of cybersecurity, explore emerging technologies, examine threats and protective measures, and investigate the diverse high-skill, high-wage, and high-demand career opportunities in the field of cybersecurity.

       This course counts as an elective credit.

Introduction to Early Childhood Education   844003
Grade(s): 9-11   Credit: 1
Prerequisite: None

Students focus on careers related to the early childhood field through hands-on experiences, including an overview of principles of child growth and development; appreciation of diversity; engaging learning experiences for children; principles of appropriate and effective guidance; healthy and safe environments; and development of self-concepts and building self-efficacy.

This course counts as an elective credit.

Introduction to Housing & Interior Design SEM   847700
Grade(s): 9-12   Credit: 0.5
Prerequisite: None

Students learn to evaluate and create plans for a pleasant living environment using their creativity, talent, and self-expression. Housing selection; development of floor plans; design of various living areas; the selection and construction of home furnishings, equipment, and accessories; and interior decorating fundamentals are covered. Students learn to use the computer to design the exterior and interior of a house as well as landscape design. Individual design projects may be required for which the students must provide materials.

This course counts as an elective credit.

Lab fee: $5.00

Project Management SEM   827700
Grade(s): 9-12   Credit: 0.5
Project Management   827000
Grade(s): 9-12   Credit: 1
Prerequisite: None

This course is designed to equip students with personal and group leadership skills. Course content includes units in principles of leadership, parliamentary law, speaking in public, developing effective communications and human relations skills, and developing positive public relations. School and community leadership opportunities are used to provide practical application of the course content.

This course counts as an elective credit.

Teacher Cadet I DE   844006
Grade(s): 11-12   Credit: 1
Prerequisite: 2.7 GPA, application process, essay, teacher recommendation; TB test is required

The Teacher Cadet Program is designed to attract talented high school students into the teaching profession through a challenging introduction to teaching. The student who completes Teacher Cadet will receive credits from Shenandoah University that could be transferable to other colleges or universities.

The program seeks to provide these students insight into the nature of teaching, the problems of schooling, and the critical issues affecting the quality of education in America's schools.

Students participate in field experiences in LCPS Grades K-12. Students work with classroom teachers at their chosen grade level of interest.

Proof of tuberculosis (TB) screening is required. Students are responsible for getting a TB screening done prior to the start of the school year.

This course counts as an elective credit.

Teacher Cadet II DE   844005
Grade(s): 12   Credit: 1
Prerequisite: Teacher Cadet I DE, TB Screening

Students continue to explore careers in the Education and Training Cluster and pathways. This course provides the opportunity for students to prepare for careers in education as they research postsecondary options, learn about the process of teacher certification in Virginia, and participate in a practicum experience. Proof of tuberculosis (TB) screening is required. Students are responsible for getting a TB screening done prior to the start of the school year

This course counts as an elective credit.

Marketing

Advanced Marketing Co-Op   823000
Grade(s): 11-12   Credit: 2
Advanced Marketing Non Co-Op   823100
Grade(s): 11-12   Credit: 1
Prerequisite: Marketing Co-Op or Marketing Non Co-Op

Offering training in pre-management level skills and designed for the student who has a firm career interest in marketing, this course allows students to continue the arrangement of combining classroom instruction with supervised on-the-job training in a local marketing business. Instruction in this year of the program concentrates primarily on the development of competencies in the areas of sales promotion, merchandising, marketing research, and management. Entrepreneurship is an integral part of this class. The student is provided with a variety of learning methods including practical activities, simulations, computer activities, guest speakers, and role-playing. Co-op students are expected to stay employed throughout the school year in a teacher-approved marketing-related job. DECA is an integral part of this course.

This course counts as an elective credit.

Advanced Marketing Co-Op Seminar DE   823006
Grade(s): 11-12   Credit: 2
Advanced Marketing Non Co-Op Seminar DE   823106
Grade(s): 11-12   Credit: 1
Prerequisite: Marketing Co-Op or Marketing Non Co-Op

This course is designed to provide students with an overview of marketing principles and strategies applicable to a dynamic high-tech economy. Marketing activities are examined as part of the strategic planning process. How these activities interface with other major organizational functions will be analyzed. The issues of business planning, research and logistics, which confront the modern marketing manager, will be detailed. Critical thinking and technology will be emphasized as the student examines new and traditional methods of creating customer value and developing customer relationships using the Internet as one of the many tools available.

This course counts as an elective credit.

Cybersecurity in Marketing   894100
Grade(s): 10-12   Credit: 1
Prerequisite: Introduction to Cybersecurity

Cybersecurity in Marketing focuses on understanding the ever-changing vulnerabilities and risks organizations face, the use of data analytics in security, and the differences between ethics and laws. Students will be introduced to issues such as risk management, privacy assurance, and threat agents, while also exploring brand protection and marketing breaches. Career opportunities in the field of cybersecurity in marketing are also investigated.

This course counts as an elective credit.

Introduction to Business & Marketing   821000
Grade(s): 9-11   Credit: 1
Prerequisite: None

This entry-level course is offered for all students and recommended as an introduction to the career preparation program in Business & Marketing Education. Students explore the role of business and marketing in the free enterprise system and the global economy and apply decision-making skills as consumers, employees, and citizens. Communication and interpersonal skills are developed through various activities.

This course counts as an elective credit.

Introduction to Cybersecurity   894101
Grade(s): 9-11   Credit: 1
Prerequisite: None

Cybersecurity affects every individual, organization, and nation. This course focuses on the evolving and all-pervasive technological environment with an emphasis on securing personal, organizational, and national information. Students will be introduced to the principles of cybersecurity, explore emerging technologies, examine threats and protective measures, and investigate the diverse high-skill, high-wage, and high-demand career opportunities in the field of cybersecurity.

This course counts as an elective credit.

Marketing Co-Op   822000
Grade(s): 11-12   Credit: 2
Marketing Non Co-Op   822100
Grade(s): 10-12   Credit: 1
Prerequisite: Introduction to Business and Marketing, recommended; screening conference with instructor

Providing instruction that enables students to hold and succeed in an entry-level job in marketing, the course combines classroom instruction with supervised on-the-job training in a local marketing business. In this year of the program students concentrate on developing competencies needed by marketing workers in the areas of human relations, communications, advertising, display, operations, sales, and product and service technology. The student is provided with a variety of learning methods including practical activities, simulations, computer activities, guest speakers, and role-playing. Co-op students are expected to stay employed throughout the school year in a teacher approved marketing related job. DECA is an integral part of this course.

This course counts as an elective credit.

Marketing Non Co-Op   822100
Grade(s): 10-12   Credit: 1
Prerequisite: Introduction to Business and Marketing recommended

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. DECA, the co-curricular student organization, offers opportunities in leadership, community, and competitive events.

This course counts as an elective credit.

Sports and Entertainment Marketing   821100
Grade(s): 10-12   Credit: 1
Prerequisite: Introduction to Business & Marketing, recommended

Sports and Entertainment Marketing is a course designed for students with an interest in the sports, entertainment, and recreation industry. This unique and innovative program explores the following areas: an orientation and understanding of the sports, entertainment, and recreation industry; strategic planning; product licensing; dealing with agents and personal managers; examination of concessions and on-site merchandising; market analysis; investigating safety and security procedures; event marketing and execution; and the production of a culminating event and the analysis of the event. DECA is an integral part of this course.

This course counts as an elective credit.

Travel & Tourism Marketing Sales   822500
Grade(s): 11-12   Credit: 1
Prerequisite: Introduction to Business and Marketing Recommended

This course is designed to provide students with an in-depth look into marketing and sales in the travel and tourism field. Students learn about issues related to business and resource management, tourism's effect on the world economy, the political impact of tourism, and how the sales process affects the tourism industry. They develop advanced competencies in the areas of communication; human relations; finance; health, safety, and environmental issues; sales and marketing; industry technology; promotional planning; and marketing research. In addition, students gain an understanding of career trends and opportunities. Academic skills (e.g., mathematics, science, English, history, social science) related to the content are also a part of this course.

This course counts as an elective credit.

Military Science

Naval Science I   848000
Grade(s): 9-12   Credit: 1
Prerequisite: Competitive application process if student is not zoned to attend Loudoun County High School

This introductory course to the NJROTC program is intended to stimulate enthusiasm for scholarship as a foundation for higher citizenship and leadership. The Junior Reserve Officer's Training Corps (JROTC) is a federal program sponsored by the United States Armed Forces in high schools across the United States. The objectives of the program are to develop good citizenship and patriotism; develop self-reliance, leadership, and responsiveness to constituted authority; improve the ability to communicate well both orally and in writing; develop an appreciation of the importance of physical fitness; increase a respect for the role of the United States Armed Forces in support of national objectives; and to develop a knowledge of basic military skills. Specific curriculum focus is on naval science studies and leadership opportunities.

This course counts as an elective credit.

Naval Science II
Grade(s): 10-12
849000
Credit: 1

Prerequisite: Naval Science I

This second-year course builds on the general introduction provided in Naval Science I to further develop the traits of citizenship and leadership in cadets, introduce cadets to technical areas of naval science, and engender a deeper awareness of the vital importance of the world oceans to the continued well-being of the United States. The course content includes ongoing instruction leadership theory, naval orientation and career planning, citizenship in the United States and other countries, Naval history from 1815 through 1930, Naval ships and shipboard evolutions, Naval weapons: gunnery, guided missiles and mines, Navigation fundamentals and rules of the road, small boat seamanship, meteorology and weather, and survival training and orienteering.

This course counts as an elective credit.

Naval Science III
Grade(s): 11-12
847000
Credit: 1

Prerequisite: Naval Science II

This third-year course builds on the general information covered in Naval Science I and II and further develops the traits of citizenship and leadership in cadets, introduces cadets to technical areas of naval science, and engenders a deeper awareness of the vital importance of the world oceans to the continued well-being of the United States. Students continue to develop their leadership skills through working as command and staff leaders. Additional communication skills are developed, including methods of instruction, preparation, and proper conduct of cadet-led classes. Human relations, group dynamics, orienteering, contemporary United States issues, and advanced military history studies are also included.

This course counts as an elective credit.

Naval Science IV
Grade(s): 12
845000
Credit: 1

Prerequisite: Naval Science III

This fourth-year course builds on the general information covered in Naval Science I, II, and III and develops leadership skills through working as command and staff leaders. Additional communication skills are developed, including methods of instruction, preparation, and proper conduct of cadet-led classes. Human relations, group dynamics, orienteering, contemporary United States issues, and advanced military history studies are also included.

This course counts as an elective credit.

Technology and Engineering Education

Advanced Drawing and Design
Grade(s): 11-12
854500
Credit: 1

Prerequisite: Engineering Drawing & Design or Architectural Drawing and Design

This advanced course allows students to use a graphic language for product design and technical illustration. They increase their understanding of drawing techniques learned in the prerequisite illustration as well as increase their understanding of drawing techniques learned in the prerequisite courses. They research design-related fields while identifying the role of advanced drawing and design in manufacturing and construction industry processes. They apply the design process, analyze design solutions, reverse engineer products, create 3D solid models using CADD, construct physical models, and create multimedia presentations of finished designs. They complete a work portfolio based on a chosen graphic project.   This course counts as an elective credit.

Aerospace Science I
Grade(s): 10-12
810000
Credit: 1

Prerequisite: None

Aerospace Science I is a course designed to introduce students to the technologies of aeronautics and space sciences. The course is a study of the interrelationship between aeronautics and space science. students use a hands-on approach to study concepts including 36 Loudoun County Public Schools aerodynamic principles, aircraft and spacecraft technologies, meteorology and space environments, commercial applications, administration, and historical perspectives. Field experiences expose students to career paths in the aerospace industry and governmental agencies.

This course counts as an elective credit.

Lab fee: $20.00

Aerospace Science II   810500
Grade(s): 11-12   **Credit: 1**
Prerequisite: Aerospace Science I

Aerospace Science II provides an advanced exploration of flight, space travel, and supporting technologies through a problem-solving method and practical application. Students explore concepts in aircraft operations; aircraft design, flight safety and maintenance; airport infrastructure; rocket technology; space systems; and living and working in the aerospace environment.

This course counts as an elective credit.

Lab fee: $20.00

Architectural Drawing and Design   854000
Grade(s): 10-12   **Credit: 1**
Prerequisite: Technical Drawing and Design

This course is designed to give the college-bound student an opportunity to explore specific fields related to Computer Aided Drafting and Design (CADD). These areas are architectural, electrical, sheet metal, structural, topographical, and mechanical. The student then chooses areas of interest and pursues independent, in-depth studies.

This course counts as an elective credit.

Cybersecurity in Manufacturing   894102
Grade(s): 10-12   **Credit: 1**
Prerequisite: Introduction to Cybersecurity

This course will emphasize manufacturing systems, safety, materials, production, business concepts, and the manufacturing process. Students will learn the principles of cybersecurity, explore emerging technologies, and examine threats and protective measures. Students will participate in enterprise team activities to create products that demonstrate elements of business and manufacturing while demonstrating cybersecurity concepts and policies, including risk management.

This course counts as an elective credit.

Engineering Drawing and Design   853500
Grade(s): 10-12   **Credit: 1**
Prerequisite: Technical Drawing and Design

Students explore the engineering design process and use a graphic language for product design, technical illustration, assembly, patent, and structural drawings. They increase their understanding of drawing and the design process and techniques learned in the prerequisite course. Students use computers, calculators, and descriptive geometry and adhere to established standards to solve design problems.

This course counts as an elective credit.

Introduction to Cybersecurity   894101
Grade(s): 9-11   **Credit: 1**
Prerequisite: None

Cybersecurity affects every individual, organization, and nation. This course focuses on the evolving and all-pervasive technological environment with an emphasis on securing personal, organizational, and national information. Students will be introduced to the principles of cybersecurity, explore emerging technologies, examine threats and protective measures, and investigate the diverse high-skill, high-wage, and high-demand career opportunities in the field of cybersecurity.

This course counts as an elective credit.

Manufacturing Systems I   852400
Grade(s): 10-12   **Credit: 1**
Prerequisite: Materials and Processes

This course provides an orientation to careers in various fields of manufacturing. Emphasis will be placed on manufacturing systems, safety, materials, production, business concepts, and the manufacturing process. Students participate in individual and team activities to create products that demonstrate critical elements of manufacturing. Students are expected to follow strict safety requirements when elements of instruction take place in the Technology Education production lab.

This course counts as an elective credit.

Lab fee: $20.00

Manufacturing Systems II 852800

Grade(s): 11-12 Credit: 1

Prerequisite: Manufacturing Systems I

Students develop an in-depth understanding of automation and its applications in manufacturing. Activities center on flexible manufacturing processes and computer integrated manufacturing (CIM). Students work in teams to solve complex interdisciplinary problems that stem from major systems in automated manufacturing. Students are expected to follow strict safety requirements when elements of instruction take place in the Technology Education production lab.

This course counts as an elective credit.

Lab Fee: $20.00

Materials and Processes 852000

Grade(s): 9-12 Credit: 1

Prerequisite: None

Students focus on the industrial/technical materials and processes as they fabricate usable products and conduct experiments. Students explore and master multiple production materials including plastics, metals, woods, ceramics, and composites. Students explore the materials and the properties of each, investigate use of the materials in products, and experiment with the development of products using the materials. Students are expected to follow strict safety requirements when elements of instruction take place in the Technology Education production lab. Virginia's Workplace Readiness competencies are also emphasized.

This course counts as an elective credit.

Lab fee: $20.00

PLTW Intro to Engineering Design H 898400

Grade(s): 9-11 Credit: 1

Prerequisite: None

Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3D modeling software and use an engineering notebook to document their work. Through both individual and collaborative team activities, such as project management and peer review. Students will develop skill in technical representation and documentation of design solutions according to accepted technical standards, and they will use current 3D design and modeling software to represent and communicate solutions. In addition, the development of computational methods that are commonly used in engineering problem solving, including statistical analysis and mathematical modeling, are emphasized. Ethical issues related to professional practice and product development are also presented.

This course counts as an elective credit.

Production Systems 851000

Grade(s): 12 Credit: 1

Prerequisite: Manufacturing Systems II

This course is designed to introduce students to the world of technology and design. Students explore the use of cutting-edge technology in production of goods. Economic and social implications are considered. Students move through the problem-solving process to plan an organization and production facility, design and produce a prototype, develop a marketing plan for the product, and evaluate potential success. Students are expected to follow strict safety requirements when elements of instruction take place in the Technology Education production lab. Virginia's Workplace Readiness competencies are also emphasized.

This course counts as an elective credit.

Lab fee: $20.00

Technical Drawing and Design 853000

Grade(s): 9-11 Credit: 1

Prerequisite: None

Technical Drawing and Design provides the student with the basic principles and theories underlying graphic representations, which are common to all areas of manufacturing and production-related work.

Learning units and required drawings emphasize the basic skills in computer assisted drawing (CADD) and related areas. Occupational information is also presented.

This course counts as an elective credit.

Technology Assessment   858000
Grade(s): 11-12   **Credit: 1**
Prerequisite: Technology Transfer

Technology Assessment is offered as a capstone course for students in high school. Students use their knowledge and abilities in technology, mathematics, science, and other disciplines to analyze the impacts of technological devices and systems on the world. Students use information they acquire through activities and research to predict the future. They use computers and assessment activities to analyze products and systems to determine their possible impact. They design and present their newly created products or systems.

This course counts as an elective credit.

Technology Foundations   856000
Grade(s): 9-12   **Credit: 1**
Prerequisite: None

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. Technologies explored include biotechnology, communications, construction, manufacturing, power and energy, and transportation. This course is only offered at Broad Run, John Champe, Dominion, Loudoun County, Loudoun Valley, Rock Ridge, Stone Bridge, Tuscarora, and Woodgrove.

This course counts as an elective credit.
Lab Fee: $20.00

Technology Transfer   857000
Grade(s): 10-12   **Credit: 1**
Prerequisite: Technology Foundations

Students work with a variety of computers, materials, and systems to improve their skills and knowledge. Groups work together applying mathematics, science, and communication concepts on a project that combines systems such as production, energy, communication, transportation, biotechnology, and other technologies. Thematic activities engage students in community problems where they transfer the technological method to address recycling, space exploration, and housing.

This course counts as an elective credit.
Lab Fee: $20.00

Technology of Robotic Design   803000
Grade(s): 9-12   **Credit: 1**
Prerequisite: None

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.

This course counts as an elective credit.
Lab Fee: $10.00

English

Students must earn four credits in English, including a survey of British literature and a survey of American literature, for both the Standard and Advanced Studies diplomas. Students in LCPS must take an English course each year of high school.

Near the end of English 11, students must take two Standards of Learning tests: Reading and Writing

Students in all English classes receive instruction to prepare them for the SOL tests.

English high school courses provide instruction in oral language, reading and literature, writing and grammar, research, and vocabulary. Students practice whole-class and independent reading, and teachers provide skills for reading fiction and nonfiction. Students write for a variety of purposes and audiences and master a range of grammar and usage skills. Research instruction emphasizes the ability to analyze, synthesize, and evaluate information from a variety of sources, and it requires students to produce formal research papers. Vocabulary instruction helps to develop students' reading comprehension and their ability to express themselves orally and in writing in all grades, and it prepares students for PSAT, SAT, ACT, and SOL tests. Teachers focus on the recognition of word roots and affixes; use of context slues to understand unfamiliar words; distinctions between denotation and connotation; and a study of synonyms, antonyms, and homophones.

Academic courses challenge students to master rigorous standards while providing individualized support. **Honors courses** are offered in Grades 9, 10, and 11. While they focus on the same skills as academic courses, honors courses are distinguished by a more rigorous and inquiry-based study of literature and nonfiction texts. All year-long honors courses receive a weight of 0.5. They move at an accelerated pace, cover a greater breadth and depth of textual study, and require more independent work.

Advanced Placement and **Dual Enrollment** courses are offered at the higher grade levels and may allow students to earn college credit.

English 9

Academic	140300
Honors	140200
Virtual Loudoun	140V00
Prerequisite: English 8	Credit: 1

In Grade 9 oral language instruction emphasizes dramatic reading of literary selections and planned oral presentations. The reading and literature component focuses on a study of fiction and nonfiction genres. Writing instruction develops skills in narrative, expository, and informational writing. Direct vocabulary instruction improves students' reading and writing fluency and prepares them for the SOL, SAT, and ACT tests. Students produce documented research papers, using print electronic databases, and on-line sources.

English 10

Academic	150300
Honors	150200
Virtual Loudoun	150V00
Prerequisite: English 9	Credit: 1

In Grade 10 oral language instruction emphasizes the participation in and the critique of small group learning activities. The reading and literature component includes a survey of British literature, especially the reading of poetry and drama; nonfiction reading focuses on the understanding and evaluation of consumer information such as labels, warranties, and contracts. Writing instruction pinpoints expository composition and the ability to critique professional and peer writing. Direct vocabulary instruction improves students' reading and writing fluency and prepares them for the SOL, SAT, and ACT tests. Students are taught to collect, organize, and present information in a documented research paper.

English 11
Academic   160300
Honors   160200
Virtual Loudoun   160V00
Prerequisite: English 10   Credit: 1
`2 SOL Tests` In Grade 11 oral language instruction emphasizes the ability to give and to critique informative and persuasive presentations. The reading and literature component focuses on a survey of American literature and the ability to read and comprehend various kinds of manuals, business letters, newspapers, brochures, reports, catalogs, journals, speeches, biographies, and autobiographies. Writing instruction focuses on the ability to write persuasively, as well as on personal, professional, and informational correspondence. Direct vocabulary instruction improves students' reading and writing fluency and prepares them for the SOL, SAT, and ACT tests. In addition to research papers, students produce multi-media research reports.

AP English Language and Composition   160100
Grade(s): 11   Credit: 1
Prerequisite: English 10
`2 SOL Tests` AP Language and Composition is recommended for students who want a challenging course that emphasizes the analysis of nonfiction. Students read a variety of works from several genres, time periods, and cultures, including a focus on texts by American authors. Varied and frequent composition assignments require close reading, rhetorical analysis, exposition of ideas, and the understanding of particular rhetorical forms and terms.

Students have the opportunity to take the AP Language and Composition exam in May with the possibility of earning college credit.

English 12
Academic   170300
Virtual Loudoun   170V00
Prerequisite: English 11   Credit: 1
This course is divided into two distinct semesters of study, one focusing on a study of world literature and the other on writing.

Students read representative literature from many cultures, countries, and time periods to increase their understanding of literature and the people who produced it. Activities in this semester include oral and written analyses of readings, overviews of the society and history that relate to a particular selection, and evaluations of author's styles and themes.

In the other semester, students receive extensive writing practice in the expository, narrative, descriptive, and persuasive forms. The semester course begins with a review of elements of style and a study of paragraph development to prepare students for more extensive assignments that follow. Students practice composing skills through the writing of critical and creative essays, description, narrative, persuasion, and exposition.

AP English Literature and Composition   170100
Grade(s): 12   Credit: 1
Prerequisite: English 11 or English Language and Composition Advanced Placement
AP Literature and Composition is recommended for students who want a challenging course that emphasizes the study and practice of writing and the analysis of literature (prose, fiction, poetry, and drama). Students read a variety of works from several genres and cultures. Varied and frequent composition assignments require close reading, literary analysis, exposition of ideas, and the understanding of particular literary forms and terms.

Students have the opportunity to take the AP Literature and Composition exam in May with the possibility of earning college credit.

English 12 DE   170006
Prerequisite: English 11 or English Language and Composition Advanced Placement   Credit: 1
LCPS provides students the opportunity to earn college credit while fulfilling their English 12 course requirement. English 12 Dual Enrollment (DE) is a rigorous, college-level course that focuses on composition, argumentation, and critical reading skills. It is a fast-paced course that covers not only the Virginia English 12 SOL, but also two full semesters of college-level composition and reading.

English 12 DE is taught by LCPS teachers who are also adjunct faculty members at participating colleges.

English Electives

Creative Writing   160700
Grade(s): 9-12   Credit: 0.5
Prerequisite: None
Creative Writing is a one-semester English elective that provides a supportive environment in which students write prose, poetry, and drama and read examples of various genres. This course focuses on the study of the fundamental elements of creative writing, including developing strategies for writing creatively, practicing aspects of narrative writing, using poetic devices, and developing voice. Students maintain a writing portfolio, collaborate to critique and improve their work for final review, and seek opportunities for publishing their writing.

Fundamentals of Writing   160702
Grade(s): 9-12   Credit: 0.5
Prerequisite: None
Fundamentals of Writing is a writing refresher course for writers of all ability levels who would like to develop their skills. This one-semester course provides a supportive environment in which students engage in various activities to improve their writing skills, particularly for expository and technical writing. This course focuses on the study of the fundamental elements of writing, including strategies for writing and aspects of nonfiction writing. Students maintain a writing portfolio and collaborate to critique and improve their work for final review.

Etymology   185700
Grade(s): 9-12   Credit: 0.5
Prerequisite: None
Etymology is the study of language families, root words, prefixes, suffixes, semantic changes, and word elements. Students study the meanings and derivations of English words to broaden their knowledge and command of the English language. This course is particularly useful for students preparing to take the SAT and ACT.

21st Century Literacy Strategies I   192000
Grade(s): 9-12   Credit: 1 per year
21st Century Literacy Strategies I   192700
Grade(s): 9-12   Credit: 0.5 per semester; students may take two semesters
Prerequisite: None
This course is designed for students who will benefit from specific instruction in reading secondary content material and strengthening reading and writing skills and strategies. Instruction supports literacy development with instruction in skills related to the alphabetic principle, fluency, vocabulary, reading comprehension, writing, viewing, critical thinking, and preparation for SOL exams. Teaching strategies increase motivation by making reading relevant to students' lives.

21st Century Literacy Strategies II   193000
Grade(s): 10-12   Credit: 1 per year
21st Century Literacy Strategies II   193700
Grade(s): 10-12   Credit: 0.5 per semester; students may take two semesters
Prerequisite: 21st Century Literacy Strategies I
This course is a continuation of 21st Century Literacy Strategies I. Instruction builds upon students' reading and writing competencies and support students' efforts to analyze, compare, evaluate, and interpret information from a variety of disciplines including texts, visual representations, and media.

21st Century Literacy Strategies III   192003
Grade(s): 9-12   Credit: 1
Prerequisite: 21st Century Literacy Strategies II
This course is a continuation of 21st Century Literacy Strategies II. Instruction continues to build upon students' reading and writing competencies and support students' efforts to analyze, compare, evaluate, and interpret information from a variety of disciplines including texts, visual representations, and media.

21st Century Literacy Strategies IV   193004
Grade(s): 10-12   Credit: 1
Prerequisite: 21st Century Literacy Strategies III
This course is a continuation of 21st Century Literacy Strategies III. Instruction continues to build upon students' reading and writing competencies and support students' efforts to analyze, compare, evaluate, and interpret information from a variety of disciplines including texts, visual representations, and media.

Women's Studies 191500
Grade(s): 11-12 Credit: 1
Prerequisite: None

This course is designed to examine women and their changing roles in society throughout time. Students will explore history through the lens of gender and will engage in research, fiction and nonfiction reading, writing, and public speaking.

Mythology 195000
Grade(s): 9-12 Credit: 1
Prerequisite: None

This course introduces students to myths and legends from past and present world cultures. It is designed to help students recognize cultural and societal archetypes, acquire tools for comparing and understanding diverse cultures, and appreciate the underlying power of myths in stimulating human imagination, art, and cultural development. Students will read, discuss, and analyze various myths and legends from around the world.

Expectations and Assessments: Students will complete journals, quizzes, tests, projects, and presentations that relate to mythology to earn credit for the course.

Introduction to Journalism 187000
Grade(s): 9-12 Credit: 1
Prerequisite: None

This year-long elective introduces students to many facets of newspaper and mass media: production, history, and writing. Students learn to use a variety of journalism skills to write in journalistic style, recognize the role of mass communication in modern society, and understand the First Amendment.

Students selecting this course should have strong writing skills or should have an interest in developing their writing skills.

This course is designed to prepare students to serve on the newspaper staff (Newspaper Journalism I) or the yearbook staff (Photojournalism I).

Newspaper Journalism I 188000
Grade(s): 10-12 Credit: 1
Prerequisite: Introduction to Journalism

Students learn the basics of newspaper production while serving as staff writers for the school newspaper.

Units of study include school press law and ethics, layout and design, basic photography, basic publication technology, journalistic research, interviewing, plant preparation, and advertising.

Students are introduced to publication software.

Newspaper Journalism II 188002
Grade(s): 11-12 Credit: 1
Prerequisite: Newspaper Journalism I

Students serve as staff writers and page editors for the school newspaper.

Units of study expand upon those introduced in Newspaper Journalism I and add on-line publication, polls and statistics, and newspaper evaluation.

Students use publication software to produce the school newspaper

Newspaper Journalism III 188003
Grade(s): 12 Credit: 1
Prerequisite: Newspaper Journalism II

Students serve as editors for the school newspaper.

Units of study expand upon those introduced in Newspaper Journalism I and II and add software and on-line services, press law, photo management, and video interviewing.

Students use publication software to produce the school newspaper.

Photojournalism I 189001
Grade(s): 10-12 Credit: 1
Prerequisite: Introduction to Journalism

Students learn the basics of yearbook production while serving as staff members for the school yearbook.

Units of study include school press law and ethics, layout and design, basic photography, basic publication technology, journalistic research, interviewing, unifying concept, plant preparation, and advertising.

Students are introduced to publication software.

Photojournalism II 189002
Grade(s): 11-12 Credit: 1
Prerequisite: Photojournalism I

Students serve as staff members and page editors for the school yearbook.

Units of study expand upon those introduced in Photojournalism I and add inclusion, accuracy, and fairness; polls and statistics; and yearbook management.

Students use publication software to produce the school yearbook.

Photojournalism III 189003
Grade(s): 12 Credit: 1
Prerequisite: Photojournalism II

Students serve as editors for the school yearbook.

Units of study expand upon those introduced in Photojournalism I and II and add press law, yearbook evaluation, video interviewing, and public relations.

Students use publication software to produce the school yearbook.

Public Speaking 194700
Grade(s): 10-12 Credit: 0.5
Prerequisite: None

Students explore the process of generating, transmitting, receiving, and evaluating ideas and feelings through intrapersonal and interpersonal communication, oral interpretation, group discussion, and public speaking. This course cultivates personal growth and development, develops oral communication skills to other academic disciplines and to life experiences.

Reading Workshop Strategies
Strategies 1 101100
Strategies 2 101200
Strategies 3 101300
Strategies 4 101400
Grade(s): 9-12 Elective Credit: 1
Prerequisite: None

Reading Strategies is an elective course for students with Individualized Educational Plans (IEP) who need specific instruction in reading and reading strategies. This course is taught based upon students' individual needs.

Writing Center I 160801
Grade(s): 10-12 Credit: 1
Prerequisite: Permission of the instructor

This course provides students with an in-depth study of writing in the academic disciplines through tutoring at a high school Writing Center. Students prepare to be peer tutors through an intense examination of the rules of compositions, critical reading, and analytical thinking about writing. Students are expected to refine and develop their own writing abilities through peer tutoring and reflective essays about their tutoring experiences.

Writing Center II 160802
Grade(s): 11-12 Credit: 1
Prerequisite: Writing Center I

This course provides students with continued in-depth study of writing in the academic disciplines through tutoring at a high school Writing Center. Students prepare to be peer tutors through an intense examination of the rules of composition, critical reading, and analytical thinking about writing. Students are expected to refine and develop their own writing abilities through peer tutoring and reflective essays about their tutoring experiences. In addition, Writing Center II students are expected to hold leadership roles in the daily operation of the Writing Center, and complete a research project and presentation on writing in a career of discipline.

Writing Center III 160803
Grade(s): 12 Credit: 1
Prerequisite: Writing Center II

This course provides students with continued in-depth study of writing in the academic disciplines through tutoring at a high school Writing Center. Students prepare to be peer tutors through an intense examination of the rules of composition, critical reading, and analytical thinking about writing. Students are expected to refine and develop their own writing abilities through peer tutoring and reflective essays about their tutoring experiences. In addition, Writing Center III students are expected to hold leadership roles in the daily operation of the Writing Center, and complete a research project and presentation on writing in a career of discipline.

English Learners

Special programs of instruction are available for students who have been identified as English Learners (EL) in all high schools.

When students enroll in Loudoun County Public Schools they are asked several home language questions on the student registration form. If a language other than English is indicated in any of these responses, an English language proficiency test is administered by a trained assessor. The test helps determine the student's proficiency level.

Each student's placement is determined on an individualized basis. Factors that should be considered before determining course placement include, but are not limited to:

- Proficiency Level
- Prior educational experience
- Student transcripts

EL students must meet all graduation requirements in order to earn a diploma. In some cases, high school age students who possess little or no English skills or who have limited or no prior education may need more than four years to complete the credits and testing needed for graduation from high school. In these instances, age waiver requests for students 20 years or older before August 1st of the school year must be submitted by the high school principal to the Assistant Superintendent of Pupil Services for approval.

EL Literacy 1   **190011**
Grade(s): 9-12   **Elective Credit: 1**

In this course, Proficiency Level 1.5 – 2.0 EL students will develop their literacy skills through a variety of reading and writing activities. Students will learn strategies to support their development as active and critical readers and will explore a variety of text types, including both fiction and nonfiction. Students will also create original compositions of varying lengths, styles and types to support their growth as writers in core content and elective study areas.

EL Literacy 2   **190012**
Grade(s): 9-12   **Elective Credit: 1**

In this course, Proficiency Level 2.0 – 3.0 EL students will expand their literacy skills in order to become more mature readers and better writers. Students will apply a variety of reading strategies as they become more active and critical readers if increasingly challenging fiction and nonfiction texts. Students will also create original compositions of varying lengths, styles, and types as they expand their skills as writers.

Newcomer English   **394010**
Grade(s): 9-12   **Elective Credit: 1**

(Proficiency Level 1.0 – 1.9) Recently arrived EL students are immersed in intensive English language and literacy development to develop social, academic, and cultural skills. ELs in this course participate in guided reading and writing activities, systematic phonics, while exploring various text types including fiction and non-fiction. All four language domains – listening, speaking, reading, and writing – are incorporated in order to support students' acquisition of academic English.

English as a World Language (EWL)   **395010**
Grade(s): 9-12   **World Language Credit: 1**

In this course, Proficiency Level 2.0 – 3.0 EL students learn to expand their communication skills in the four language domains (listening, speaking, reading, and writing). Complex vocabulary, grammatical, and sentence structures are used to extend students' development of academic English.

Advanced English Learners (ADV EL)   **197010**
Grade(s): 9-12   **English Credit: 1**

In this course, Proficiency Level 3.0 EL students engage in the four language domains (listening, speaking, reading, and writing) around a variety of topics and themes as they refine their academic English. This course is taught by either an English Learner or an English Language Arts teacher.

Pre-Newcomer EL Mathematics	588005
Grade(s): 9-12	**Elective Credit: 1 (not a Math credit)**
        In this course, Newcomer EL students (Proficiency Level 1.0 – 2.0) learn the language of mathematics as well as fundamental basic and conceptual math skills to build understanding of key concepts associated with newcomer EL Mathematics Concepts and Algebra I. This course is most appropriate for students at low levels of English proficiency who possess limited background in mathematics and/or have had limited or interrupted schooling.

Newcomer EL Mathematics	588010
Grade(s): 9-12	**Elective Credit: 1 (not a Math credit)**
        In this course, Newcomer EL students (Proficiency Level 1.0 – 2.5) learn the language of mathematics along with key concepts of the grade-level mathematics curricula of Algebra I and Geometry.

Newcomer EL Science	650310
Grade(s): 9-12	**Elective Credit: 1 (not a Science credit)**
        In this course, Newcomer EL students (Proficiency Level 1.0 – 2.0) learn the language of science along with key concepts of the grade-level science curricula, including general science theory, earth science, and biology. This course is most appropriate for students at low levels of English proficiency who possess limited background in science and/or have had limited or interrupted prior schooling.

Newcomer EL Social Science	770010
Grade(s): 9-12	**Elective Credit: 1 (not a Social Science credit)**
        In this course, Newcomer EL students (Proficiency Level 1.0 – 2.0) learn the language of social science along with key concepts of the grade-level social science curricula, including World History and United States and Virginia History. This course is most appropriate for students at low levels of English proficiency who possess limited background in social science and/or have had limited or interrupted prior schooling.

Fine Arts

Art Courses

Art I	240000
Grade(s): 9-12	**Credit: 1**
Prerequisite: None
        Explore innovative ideas, materials, and techniques through artmaking. Build on middle school art experiences by practicing new skills. Engage in the creative process through critical thinking and authentic problem solving to create, present, respond and connect with your own art and the art of others. Work with a range of two dimensional and three-dimensional media including drawing painting, printmaking, sculpture, ceramics, photography, and computer graphics. Participate in discussions focused on art history, criticism and aesthetics and connect visual art concepts with other disciplines. Compile a working assessment portfolio.

Art II	241000
Grade(s): 10-12	**Credit: 1**
Prerequisite: Art I
        Expand skills, techniques and concepts acquired in Art 1 using a variety of two dimensional and three-dimensional media. Generate original ideas for art production inspired by real world experiences. Engage in the artistic process by making choices in creating, presenting, and responding to your own art and the art of others. Develop a personal style in art making based on the study of art history, criticism and aesthetics. Explore connections between visual art concepts and those in other disciplines. Review, refine and continue to build a working assessment portfolio.

Art III   242000
Grade(s): 11-12   Credit: 1
Prerequisite: Art II or Art I and 2 semester courses

Initiate and design individual art making challenges to fulfill desired outcomes for artworks. Investigate a range of contemporary issues to inform idea development. Employ current technologies, select media, tools and processes for intended purposes and practice innovative techniques to refine and enhance personal style. Apply critical thinking and make judgments regarding personal artworks and the works of others. Continue compiling a working assessment portfolio and select artworks for a presentation portfolio based on self-determined criteria. Consult with the instructor regarding requirements for an AP studio art portfolio.

Art IV   243000
Grade(s): 12   Credit 1
Prerequisite: Art III

Assume responsibility for the establishment of personal goals for communication and creative expression in art making. Employ current technologies and communication tools to build a resource file for idea generation. Investigate and discriminate among multiple issues and resources to inform art content. Innovate in the use of select media, tools and processes for intended purposes. Refine personal style in a consistent manner to convey complex ideas. Organize and complete a presentation portfolio based on self-determined criteria. Participate in discussions related to careers in visual art.

Survey of Art and Architecture History I   247700
Grade(s): 9-12   Credit: 0.5
Prerequisite: None

Survey the history and impact of art and architecture on society from pre-historic times through the early Renaissance. Participate in investigations and discussions on the relationship among social, scientific and philosophical developments in past societies. Focus on the art and architecture produced during these time periods. Make choices, conduct research and engage in studio art processes to prepare presentations on related topics.

Survey of Art and Architecture History II   248700
Grade(s): 9-12   Credit: 0.5
Prerequisite: None

Survey the history and impact of art and architecture on society from the late Renaissance into the 21st Century. Compare and contrast contemporary societies with those of the past in terms of economic, social, scientific and philosophical factors. Focus on the art and architecture produced among diverse cultures. Make choices, conduct research and engage in studio art processes to prepare presentations on related topics.

Computer Graphic Design   232700
Grade(s): 10-12   Credit: 0.5
Prerequisite: Art I

Explore and differentiate between the commercial and fine art applications of graphic design. Employ design thinking to convey visual concepts in creative ways. Develop skills and techniques in the use of current computer software and discover ways to inspire, inform, and captivate viewers and potential consumers. Practice digital media approaches to visual communication through image manipulation, illustration, layout and product design. Prepare a portfolio of completed work.

Ceramics   245000
Grade(s): 10-12   Credit: 0.5
Prerequisite: Art I

Explore the challenges of creating three-dimensional artworks with clay. Discover the properties and capabilities of the material starting with raw clay and working through the firing process. Practice and apply hand building and wheel throwing techniques to form functional and decorative objects. Become familiar with traditional and non-traditional finishing applications including incising, impressing, glazing, and painting. Conceive and produce innovative ceramic art works. Compile a portfolio to include examples of product development ideas and images of final works.

Drawing and Painting   231700
Grade(s): 10-12   Credit: 0.5
Prerequisite: Art I

Investigate and record the world through observation, imagination and memory. Practice and apply traditional and non-traditional drawing and painting techniques using a variety of media. Conceive original ideas and innovate approaches to express meaning in drawings and paintings. Participate in critiques and discussions of personal artworks and the works of recognized artists to inform future artmaking. Maintain a sketchbook/journal to record progress, capture reflective thoughts and generate new ideas for artworks.

Photography   245700

Grade(s): 10-12   Credit: 0.5

Photography   245600

Grade(s): 10-12   Credit: 1

Prerequisite: Art I

        Experience approaches to analog and digital photography. Explore the functions of a 35mm single lens reflex camera and work with the chemistry of film and print development. Engage in digital photography to include camera use, image capture, enhancement and manipulation using Adobe Photoshop. Follow compositional guidelines in photographing and producing images. Participate in critiques and discussions regarding quality, aesthetics, content and meaning in finished photographs. Survey the history of photography to inform personal approaches to the process. Compile a portfolio of completed photographs.

        Course offering options:

- Full year in-depth darkroom and/or digital
- Semester introduction to darkroom and/or digital

Sculpture   244700

Grade(s): 10-12   Credit: 0.5

Prerequisite: Art I

        Experience working in the third dimension by developing skills and techniques in the manipulation of sculpture tools and materials. Conceive original ideas and innovate to solve artistic problems in the formation and construction of meaningful sculptures. Participate in reviews and discussions of recognized sculptors to inform the creative process. Choose among traditional and non-traditional materials and vary techniques to match desired outcomes. Follow guidelines to produce well crafted, stabile sculptures. Compile a portfolio to include plans and documentation of final sculptures.

AP Drawing   247100

Grade(s):   Credit: 1

Prerequisite:

        Investigate formal and conceptual issues related to visual art in a creative and systematic way. Develop and enhance personal skills and techniques over time. Make informed, critical decisions based on research and desired outcomes for artworks. Employ visual elements to support and express content. Invent original approaches to studio practices and produce meaningful artworks that speak to contemporary cultural and societal issues. Compile and submit a portfolio based on College Board guidelines: Section I. Sustained Investigation – select works that demonstrate investigation and process of discovery and revision; Section II: Selected Works – select works and writing that best exhibit a syntheses of materials, processes, and ideas.

AP 3D Art and Design   249200

Grade(s):   Credit: 1

Prerequisite:

        Investigate formal and conceptual issues related to visual art in a creative and systematic way. Develop and enhance personal skills and techniques over time. Make informed, critical decisions based on research and desired outcomes for artworks. Employ three-dimensional visual elements to support and express content through a variety of media. Invent original approaches to studio practices and produce meaningful artworks that speak to contemporary cultural and societal issues. Compile and submit a portfolio based on College Board guidelines: Section I. Sustained Investigation – select works that demonstrate investigation and process of discovery and revision; Section II: Selected Works – select works and writing that best exhibit a synthesis of materials, processes, and ideas.

AP 2D Art and Design   248100

Grade(s):   Credit: 1

Prerequisite:

        Investigate formal and conceptual issues related to visual art in a creative and systematic way. Develop and enhance personal skills and techniques over time. Make informed, critical decisions based on research and desired outcomes for artworks. Employ two-dimensional visual elements to support and express content through a variety of media. Invent original approaches to studio practices and produce meaningful artworks that speak to contemporary cultural and societal issues. Compile and submit a portfolio based on College Board guidelines: Section I. Sustained Investigation – select works that demonstrate investigation and process of discovery and revision; Section II: Selected Works – select works and writing that best exhibit a synthesis of materials, processes, and ideas.

Music Courses

Music Appreciation   260000
Grade(s): 9-12   Credit: 1
Prerequisite: None
Exploring the impact of music throughout the ages helps students become informed consumers and culturally aware participants in the 21st century. Students explore music in a wide variety of musical styles and time periods in this course. They will explore the relationship of music to art, architecture, and history, as well as the use of music technology in today's music. A lively curiosity and an in interest in exploring the power of music are the only prerequisites for this class.

Music Appreciation DE   262206
Grade(s): 11-12   Credit: 1
Prerequisite: None
Participants in the course will be given the tools to develop a meaningful, engaging and deeper understanding of music. The course will concentrate on the development of an attentive style of listening, the introduction and systematic study of the building blocks of music and will enhance awareness of the main musical styles of selected western and non-western cultures.

Music Theory/History   262000
Grade(s): 9-12   Credit: 1
Prerequisite: None
The ability to understand and converse in the language of written music is the key to gaining a deeper understanding of the music that surrounds people. Students develop their keyboard skills through original musical compositions, build critical thinking skills, and compare musical examples. This course is recommended for students planning to pursue music in college and for the joy of creation to anyone who loves music. No performance is required.

AP Music Theory   262100
Grade(s): 9-12   Credit: 1
Prerequisite: Successful completion of Music Theory/History and/or teacher recommendation
Students in Advanced Placement Music Theory learn to recognize, understand, analyze and describe elements of music theory through composition, aural skills (ear-training, dictation, and sight-singing), notation terminology, and score analysis. Students in AP Music Theory are highly encouraged to be active in some form of music performance or composition.
Students have the opportunity to take the AP Music Theory exam in May with the possibility of earning college credit.

Instrumental Music Courses

Instrument Methods   270000
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition
Students develop fundamental playing skills on musical instruments in a supportive environment in the Instrumental Methods class. They receive special coaching in the areas of tone production, music reading, fingerings, and playing in an ensemble. Public performances are not stressed, but a concert may be planned at the teacher's discretion.

Concert Band I   272000
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition
Concert Band I H   272100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Concert Band I
This performance-oriented band participates in concert appearances and Virginia Music Education Association events. Students continue the in-depth mastery of basic fundamentals of music while preparing pieces for performances. As a co-curricular ensemble, performances and rehearsals outside regular school hours are required.

Concert Band II   274000
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition
Concert Band II H   274100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Concert Band II

     Students in this class expand their knowledge and skills of instrumental techniques, tone production, musical interpretation, and ensemble/solo performance to an advanced level. Concert Band II is a performance-oriented class, and students are active in numerous concerts and events. As a co-curricular ensemble, performances and rehearsals outside regular school hours are a requirement.

Beginning Orchestra   275004
Grade(s): 9-12   Credit: 1
Prerequisite: None

     This class is open to students who wish to learn how to play an orchestral string instrument but have no previous musical experience. Attention is focused on the development and understanding of fundamental string techniques including proper tone production, bow hold, hand positions, and aural and notation reading skills. Students are expected to supply their own instruments.

Intermediate Orchestra   275003
Grade(s): 9-12   Credit: 1
Prerequisite: Successful completion of LCPS middle school orchestra program, high school level Beginning Orchestra, or teacher recommendation.

     Students in the Intermediate Orchestra course continue to develop proper tone production, style, playing technique, and appropriate ensemble skills while preparing musical selections for performance. As a co-curricular ensemble, performances outside regular school hours are a requirement.

Advanced Orchestra   275002
Grade(s): 9-12   Credit: 1
Prerequisite: Successful completion of high school Intermediate Orchestra or teacher recommendation
Advanced Orchestra H   275100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Advanced Orchestra

     Technical and expressive skills increase in difficulty as students demonstrate mastery of a variety of articulations, bowings, positions, required scales, and arpeggios. Students at the advanced level perform, discuss, and critically evaluate characteristics of more elaborate musical compositions. This is a performance-oriented class, and students are active in numerous concerts and events. As a co-curricular ensemble, performances outside regular school hours are a requirement.

Artist Orchestra   275001
Grade(s): 9-12   Credit: 1
Prerequisite: Successful completion of high school Advanced level or teacher recommendation
Artist Orchestra H   275200
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher recommendation/Audition and enrollment in Advanced Orchestra

     Students who perform at the Artist level have built upon and mastered the previous high school skill levels of Beginning, Intermediate, and Advanced Orchestra. The Artist Orchestra student demonstrates exceptional skill level and is able to perform, discuss, analyze, and critically evaluate characteristics of more elaborate music compositions from a variety of styles, cultures, and historical periods. The ensemble is performance-oriented and is involved in concert appearances and county, regional, and state events. As a co-curricular ensemble, performances outside regular school hours are a requirement.

Jazz Ensemble   276000
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition

     The basic fundamentals of jazz (theory, interpretation, improvisation, and other techniques) are covered in this performance-oriented class. As a co-curricular ensemble, performances and rehearsals outside regular school hours are a requirement.

Beginning Guitar   293000
Grade(s): 9-12   Credit: 1
Prerequisite: None
> This class is open to students with no previous musical experience. The purpose of this course is to prepare students for a lifetime of guitar playing and music appreciation. Topics include standard musical notation; knowledge of the fretboard through fifth position; introduction to left- and right-handed techniques, including fingerstyle and pick technique; fundamentals of music; chords; basic song accompaniment; music history; listening; and understanding of guitar terminology. The class also includes solo and ensemble literature. A variety of musical styles are explored. Students must supply a standard nylon string classical guitar.

Intermediate Guitar   294000
Grade(s): 9-12   Credit: 1
Prerequisite: Successful completion of Beginning Guitar, Audition, or Teacher Recommendation
> This class is open to students who have completed the LCPS guitar program in middle school or have successfully completed the Beginning Guitar class at the high school level. Students who do not meet these prerequisites may be accepted by audition. The purpose of this course is to prepare students for a lifetime of guitar playing and music appreciation. Topics include completion of the fingerboard, refinement of right- and left-handed technique, advanced chord forms, scales, improvisation, and solo and ensemble repertoire. A variety of musical styles are explored. The ensemble is performance-oriented and is involved in concert appearances and county events. As a co-curricular ensemble, performances outside regular school hours are a requirement. Students must supply a standard nylon string classical guitar.

Advanced Guitar   295000
Grade(s): 9-12   Credit: 1
Prerequisite: Successful completion of Intermediate Guitar, Audition, or Teacher Recommendation
Advanced Guitar H   295100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Advanced Guitar
> This class is open to students who have completed Intermediate Guitar. Students who have not completed Intermediate Guitar may be accepted by audition. The purpose of this course is to prepare students for a lifetime of guitar playing and music appreciation. Topics include mastery of the fingerboard, refinement of right- and left-handed technique, advanced chord forms, scales, improvisation, and advanced solo and ensemble repertoire. A variety of musical styles are explored. The ensemble is performance-oriented and is involved in concert appearances and county events. As a co-curricular ensemble, performances outside regular school hours are a requirement. Students must supply a standard nylon string classical guitar.

Artist Guitar   296000
Grade(s): 9-12   Credit: 1
Prerequisite: Successful completion of Advanced Guitar, Audition, or Teacher Recommendation
Artist Guitar H   296100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Artist Guitar
> Students who perform at the Artist level have built upon and mastered the previous sill levels of Beginning, Intermediate, and Advanced Guitar. Artist Guitar students perform, discuss, analyze, and critically evaluate characteristics of more elaborate music compositions from a variety of styles. The ensemble is performance-oriented and is involved in concert appearances and county events. As a co-curricular ensemble, performances outside regular school hours are a requirement. Students must supply a standard nylon string classical guitar.

Vocal Music Courses

Mixed Chorus   280000
Grade(s): 9-12   Credit:1
Prerequisite: None
> Mixed Chorus provides a singing experience for students who have no background in choral music. Through participation in performances, students build self-confidence and the concept of teamwork. Basic vocal technique, music literacy and sight reading are components of this class. Students will develop choral literacy by singing a wide variety of choral literature that is both sacred and secular. Participation in ensemble performances is required.

Small Vocal Ensemble   278000
Grade(s): 9-12   Credit: 1
Prerequisite: Audition

Small Vocal Ensemble H   278100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Small Vocal Ensemble
The Small Vocal Ensemble offers unique opportunities for highly motivated and dedicated singers who can perform at a high level of proficiency. Students receive specialized coaching in singing techniques and perform music in a wide variety of styles. Music literacy and sight reading are components of this class. Students will develop choral literacy by signing literature that is sacred and secular. Participation in ensemble performances is required.

Advanced Mixed Chorus   282000
Grade(s): 9-12   Credit: 1
Prerequisite: Audition

Advanced Mixed Chorus H   282100
Grade(s): 9-12   Credit:1
Prerequisite: Teacher Recommendation/Audition and enrollment in Advanced Mixed Chorus
Advanced Chorus is a select group of highly motivated and committed students who are seeking a more intense performance experience. Members of this group will continue to build their individual skills by performing in a variety of settings. Students will develop choral literacy by singing a wide variety of choral literature that is both sacred and secular. Music literacy and sight reading are components of this class. Participation in concerts as well as certain choral competitions is required.

Advanced Bass Chorus   284000
Grade(s): 9-12   Credit: 1
Prerequisite: Audition

Advanced Bass Chorus H   284100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Advanced Bass Chorus
Auditioned Advanced Bass Chorus is a select group of singers who have the opportunity to perform three and four-part music written for the tenor and bass voices. Members of this group continue to build their vocal skills by performing in a variety of settings. Music literacy and sight reading are components of this class. Students will develop choral literacy by singing a wide variety of choral literature that is both sacred and secular. Participation in concerts as well as certain choral competitions is required.

Advanced Treble Chorus   286000
Grade(s): 9-12   Credit: 1
Prerequisite: Audition

Advanced Treble Chorus H   286100
Grade(s): 9-12   Credit: 1
Prerequisite: Teacher Recommendation/Audition and enrollment in Advanced Treble Chorus
Auditioned Advanced Treble Chorus is a select group of singers who have the opportunity to perform three and four-part music written for the soprano and alto voices. Members of this group continue to build their vocal skills by performing in a variety of settings. Music literacy and sight reading are components of this class. Students will develop choral literacy by singing a wide variety of choral literature that is both sacred and secular. Participation in concerts as well as certain choral competitions is required.

Bass Chorus   284001
Grade(s): 9-12   Credit: 1
Prerequisite: None
Students with lower voices (tenor and bass) who have no prior singing experience have the opportunity to participate in Bass Chorus. Through participation in performances, students build self-confidence and the concept of teamwork. Basic vocal technique, music literacy and sight reading are components of this class. Students will develop choral literacy by singing a wide variety of choral literature that is both sacred and secular. Participation in ensemble performances is required.

Treble Chorus   286001
Grade(s): 9-12   Credit: 1
Prerequisite: None
Students with higher voices (soprano and alto) who have no prior singing experience have the opportunity to participate in Treble Chorus. Through participation in performances, students build self-confidence and the concept of teamwork. Basic vocal technique, music literacy and sight reading are components of this class. Students will develop choral literacy by singing a wide variety of choral literature that is both sacred and secular. Participation in ensemble performances is required.

Theatre Arts

Theater Arts I 250000
Grade(s): 9-12 Credit: 1
Prerequisite: None

Students survey the technical and performing art of theater. They are exposed to the major elements of theater and gain knowledge of its principles through study and practice in both performance and production. Representative units of study include improvisation, mime, basic acting, the history of the theater, stage settings, costuming, make-up, and lighting.

Theater Arts II 251000
Grade(s): 10-12 Credit: 1
Prerequisite: Theater Arts I, or by audition/interview

More than a continuation of Theater Arts I, Theater Arts II is an in-depth study of areas covered only briefly in the first year and an introduction to new areas. The basic course is built on a cluster of required units that stress direction, design, and acting.

Required units are augmented or new units added to accommodate students' abilities and experiences.

Theater Arts III 252000
Grade(s): 11-12 Credit: 1
Prerequisite: Theater Arts II, or by audition/interview

Designed for students with high interest and motivation for study in the theater arts while increasing their understanding of the entire realm of theater, the course provides the students with the opportunity to put theory into practice through major projects in directing, acting, and design.

Theater Arts IV 253000
Grade(s): 12 Credit: 1
Prerequisite: Theater Arts III, or by audition/interview

Designed for students with intense interest in theater arts at professional and/or collegiate levels, Theater Arts IV students also complete independent projects specifically suited to individual strengths.

Although students have the opportunity to perform certain independent projects, they are expected to perform in group projects and activities in a leadership capacity.

Technical Theater I 254000
Grade(s): 9-12 Credit: 1
Prerequisite: None

The course is an exploration of the duties of state technicians and their contribution to the total aesthetic effect of a dramatic production. Topics covered include design research and principles; scene shop organization; painting and construction techniques; equipment use and maintenance; principles and application of sound, lighting, and computer technology; the use of special effects; costume and make-up considerations and selection; publicity and business management; theater safety; and the function of technical stage personnel in production work. Technical theater incorporates academic study and hands-on application of knowledge and skills.

Technical Theater II 255000
Grade(s): 10-12 Credit: 1
Prerequisite: Technical Theater I
This course can be retaken for credit.

Similar to Technical Theater I, the course involves additional exploration of the duties of stage technicians and their contribution to the total aesthetic effect of a dramatic production. Topics covered include a review of basic design research and principles; leadership roles in scene shop supervision; a review of principles and application of sound, lighting, and computer technology with an emphasis on sound and lighting design principles; a survey of theater safety from the perspective of students' increased roles as supervisors in scene work activity; and major technical stage positions in production work. Technical Theater II incorporates additional research and academic study and hands-on application of knowledge and skills. Technical II students also complete an additional unit of Design/Technical Portfolio in preparation for college admission requirements. Students may retake Technical Theater II for credit, specializing in an area of student and revising their design/technical portfolios to reflect their growing expertise in their specialization.

Drama Projects: Musical Theatre   257000
Grade(s): 10-12   Credit: 1
Prerequisite: Theater Arts I and/or special permission by Theatre Arts Instructor

      In Drama Projects (Musical Theatre), students will intensify their study of all styles of theatre with a central focus on musical theatre. Great emphasis will be placed on developing one's audition skills and students will be expected to participate in a rigorous audition process in a variety of styles as part of the course. Rehearsal and Performance will be used to explore musical theatre in a studio workshop setting. Students will study the work of the actor/singer/dancer and use their gained knowledge to develop as performers. There will be a concentration on vocal methods and music, including vocal technique and sight-singing. Additionally, students will study different styles of movement and dance including modern, jazz and contemporary.

      Not all schools may offer this course.

Introduction to Theatre Arts DE   258006
Grade(s): 11-12   Credit: 1
Prerequisite: None

      Surveys the principles of drama, the development of theatre production, acting styles, performance and selected plays to acquaint the student with various types of theatrical presentations. Further study of the playwright, actor, director and designers aims to increase the knowledge and enjoyment of theatre. Study of theatre arts will focus on process, rehearsal, performance and organization from text to production.

      This course may not be offered at all schools.

Theatre History/Literature
and Performance DE   256006
Grade(s): 11-12   Credit: 1
Prerequisite: Intro to Theatre Arts DE

      Analyzes and studies all aspects of theatre history. Topics of study include acting, acting styles, primitive tribal ritual, Greek theatre, Medieval drama, Commedia del Art, Elizabethan theatre, French theatre, German theatre, and modern theatre. Great emphasis will be placed on understanding the dramatic literature, staging, directing and acting of each period of history. Production methods will be explored to understand the relationship of theatre history to cultural and societal influences.

      This course may not be offered at all schools.

Advanced Stagecraft DE   259006
Grade(s): 11-12   Credit: 1
Prerequisite: Technical Theatre

      In this course students will participate in a diverse array of project-based learning experiences. The course will ask students to explore and demonstrate skills on a rigorous and collegiate level in scenic design, lighting design, stage management, audio engineering and properties design. This course will serve to fulfill the basic requirement of Stagecraft for some theatre majors. Additionally, students may also be tasked with designing for the VHSL One Act Competition and/ or Musical Theatre Performance class, submitting their designs at the Virginia Thespian Festival, and complete 80 laboratory hours outside of regular instruction. *This course may not be offered at all high schools.*

Health and Physical Education

Health and Physical Education 9   440000
Virtual Loudoun   440V00
Grade(s): 9   Credit: 1
Prerequisite: None

Students are offered a variety of challenging activities with an emphasis on incorporating the five components of fitness and the application of the scientific principles of anatomy and physiology into a fitness plan. High School Health and Physical Education is scheduled for one block every other day. Students begin to develop personal choices for preferred activities that include cooperative games, individual and dual sports, team sports, rhythmic activities, physical fitness testing, and lifetime fitness and recreational activities.

The 9th grade health curriculum includes topics such as personal fitness and nutrition; stress and mental health; sleep; alcohol, tobacco, and drugs; gang involvement; endocrine system; body image and eating disorders; risk behaviors; consumer health and health agencies; global health issues; certification training in Cardio-Pulmonary resuscitation (CPR), Automatic External Defibrillation (AED) and First Aid; community health; and the use of technology in making informed, healthy choices. Selected Family Life Education (FLE) topics are also included in this course.

Health and Physical Education 10   450000
Virtual Loudoun   450V00
Grade(s): 10   Credit: 1
Prerequisite: Health and PE 9

Students are offered a variety of challenging activities with an emphasis on incorporating the five components of fitness and the application of the scientific principles of anatomy and physiology into a fitness plan. High School Health and Physical Education is scheduled for one block every other day. At this level, students select preferred activities from a menu of activities, including cooperative games, individual and dual sports, team sports, rhythmic activities, and lifetime fitness and recreational activities. Physical fitness testing is also included in this course.

The 10th grade health curriculum includes topics such as medical and health career opportunities; alcohol, tobacco, and other drugs; organ donation; nutrition and wellness planning; risk behaviors; sedentary lifestyle; cancer; chronic disease; suicide; need for medical screenings; crisis management plans for natural disasters; emotional health; peer pressure; and conflict resolution. Driver Education classroom instruction and selected Family Life Education (FLE) topics are also included in this course.

Classroom Driver Education   453000
Grade(s): 10   Credit: 0
Prerequisite: Health and PE 9

This course consists of 36 hours of classroom instruction and the 90-minute Partners for Safe Teen Driving presentation. Classroom Driver Education includes topics such as motor vehicle laws, vehicle controls, influences on driver behavior, adverse conditions, responsible driving behaviors, time and space management, and basic maneuvers. This course follows the Virginia Standards of Learning for Driver Education classroom instruction.

As mandated by the Virginia General Assembly, a 90-minute Partners for Safe Teen Driving presentation is also required for classroom completion. The parent/guardian **and** teen driver must attend this presentation together (§22.1-205 of the *Code of Virginia*). Students will not be issued a Driver Education classroom completion card (DEC-1) until this requirement is met.

Students taking Classroom Driver Education will earn the grades of *P-Pass, N-Not Pass,* or *F-Fail*. If a student does not attend the Partners for Safe Teen Driving presentation that is offered at every high school, the student will earn a grade of N until they complete the presentation.

Transfer students, students who failed the Driver Education portion of H/PE 10, or students who have taken and passed Driver Education but failed the Department of Motor Vehicles written test must re-take the classroom portion of Driver Education. Students should take a state-approved Classroom Driver Education course online.

Intro to Outdoor Education   461001
Grade(s): 11-12   Credit: 1
Intro to Outdoor Education   461701
Grade(s): 11-12   Credit: 0.5
Prerequisite: HPE 10

This course provides students with knowledge, experience and an opportunity to develop skills in more than one outdoor/recreational pursuit.

Advanced Outdoor Education   461002
Grade(s): 11-12   Credit: 1
Advanced Outdoor Education   461702
Grade(s): 11-12   Credit: 0.5
Prerequisite: Intro to Outdoor Education
        Advanced Outdoor Education provides student with deeper knowledge, experience, and an opportunity to develop skills in more than one outdoor/recreational pursuit.

Personal Fitness   468001
Grade(s): 11-12   Credit: 1
Personal Fitness   468701
Grade(s): 11-12   Credit: 0.5
Prerequisite: HPE 10
        This elective course focuses on the design and implementation of a personal fitness portfolio that includes dietary needs; personal fitness goals; physical activities that are self-selected and sustainable for a lifetime; ongoing fitness and nutrition assessments; understanding of target heart rate; use of fitness data; and daily activity logs that are designed to record physical activity in the moderate to vigorous range. Students may select physical activities from the following areas: individual and dual sports, team sports, weight training and conditioning, personal fitness, recreational activities, and rhythmic activities.

Intro to Weight Training   462001
Grade(s): 11-12   Credit: 1
Intro to Weight Training   462701
Grade(s): 11-12   Credit: 0.5
Prerequisite: HPE 10
        Intro to Weight Training introduces students to a variety of foundational weight training techniques and formats. This elective will help students develop knowledge and skills with free weights and universal stations while emphasizing safety and proper body positioning; they may include other components such as anatomy and conditioning. Students will develop goal-setting skills of their muscular strength and muscular endurance gains over the duration of the course by logging and analyzing their fitness data.

Advanced Weight Training   462003
Grade(s): 11-12   Credit: 1
Advanced Weight Training   468702
Grade(s): 11-12   Credit: 0.5
Prerequisite: Intro to Weight Training
        Advanced Weight Training provides students with a more extensive look at developing an individualized weight training program. This elective will help students develop a deeper knowledge of the skills necessary for using free weights and universal stations. A continued emphasis is placed on safety and proper body positioning and may include other components such as anatomy and conditioning. Students will develop goal-setting skills of their muscular strength and muscular endurance gains over the duration of the course by logging and analyzing their fitness data.

Lifetime Sports   466001
Grade(s): 11-12   Credit: 1
Lifetime Sports   466701
Grade(s): 11-12   Credit: 0.5
Prerequisite: HPE 10
        This elective course provides students with knowledge, experience, and opportunities to develop skills in more than one individual, dual, or lifetime sport component. The course centers around the attainment of a healthy lifestyle through health and sports-related fitness.

Lifetime Fitness   469001
Grade(s): 11-12   Credit: 1
Lifetime Fitness   469701
Grade(s): 11-12   Credit: 0.5
Prerequisite: HPE 10
        Lifetime Fitness is an elective designed for students who have an interest in maintaining overall fitness for life. This course promotes an appreciation of the benefits of lifetime physical fitness, with an emphasis placed on self-selected activities that the student will be likely to continue for a lifetime. Students have the opportunity to develop an advanced level of proficiency in the following areas: individual and dual sports, team sports, weight training and conditioning, personal fitness, recreational activities, and rhythmic activities. Students also develop a fitness portfolio that includes personal fitness goals, nutrition, and healthy choices.

Intro to Strength and Conditioning 463001
Grade(s): 11-12 Credit: 1
Intro to Strength and Conditioning 463701
Grade(s): 11-12 Credit: 0.5
Prerequisite: HPE 10

Intro to Strength and Conditioning is an elective course where students will learn how to become proficient movers by focusing on the fundamentals of anatomical movement. Students will be introduced to a variety of strength and conditioning components such as Plyometrics, Speed-Agility-Quickness, Weights, Aerobics, and Flexibility. Students will develop a strength and conditioning program by implementing progressive training practices.

Advanced Strength and Conditioning 463002
Grade(s): 11-12 Credit: 1
Advanced Strength and Conditioning 463703
Grade(s): 11-12 Credit: 0.5
Prerequisite: Intro to Strength and Conditioning

Advanced Strength and Conditioning is an elective course where students have a background and understanding of the proper anatomical mechanics to be proficient movers. Students will continue to enhance strength and conditioning performance through the implementation of integrated flexibility, Plyometrics, weights, aerobic conditioning that includes HIIT and Speed-Agility-Quickness training. Students will collect their fitness data to design an individual strength and conditioning program.

Intro to Team Sports 464001
Grade(s): 11-12 Credit: 1
Intro to Team Sports 464701
Grade(s): 11-12 Credit: 0.5
Prerequisite: HPE 10

This team sports elective course is for students to continue exploring sports, games, and other recreational activities. This course takes a deeper look into rules, strategies, officiating, and sport-specific assessments. The ultimate goal of this course is to provide a venue where students can take a deeper look into sports and wellness.

Advanced Team Sports 464002
Grade(s): 11-12 Credit: 1
Advanced Team Sports 464702
Grade(s): 11-12 Credit: 0.5
Prerequisite: Intro to Team Sports

Advanced Team Sports is an elective course for students to explore sports, games, and other recreational activities through a more complex lens. Individual students are tasked with collaborating alongside their teammates to decide on rules, strategies, officiating, and sport-specific assessments. The ultimate goal of this course is to provide a venue where students experience 21st Century skills through sports and activities.

Intro to Yoga 467001
Grade(s): 11-12 Credit: 1
Intro to Yoga 467701
Grade(s): 11-12 Credit: 0.5
Prerequisite: HPE 10

Intro to Yoga provides students with a foundation of knowledge, skills and experiences needed to apply stress-reducing activities to improve posture, movement, flexibility, balance, core function, cardiorespiratory fitness, muscular strength, and muscular endurance. Students will learn and experience the benefits of various mind-body exercises and activities.

Advanced Yoga 467002
Grade(s): 11-12 Credit: 1
Advanced Yoga 467702
Grade(s): 11-12 Credit: 0.5
Prerequisite: Intro to Yoga

Advanced Yoga builds and expands the students' knowledge, skills, and experiences from Intro to Yoga. Students will continue applying stress-reducing activities to improve posture, movement, flexibility, balance, core function, cardiorespiratory fitness, muscular strength, and muscular endurance. With an understanding of the benefits of mind-body exercises and activities, students will develop an individual Yoga program through goal-setting.

NASM Certified Personal Trainer   465007
Grade(s): 11-12   Credit: 1
Prerequisite: HPE 10, 17+ years of age, Government issued photo ID
     This elective course is designed for students who have an interest in pursuing a career in the health and fitness field, specifically through certified personal training. Upon successful completion of this National Academy of Sports Medicine (NASM) course and passing an off-site, industry exam, students will have the opportunity to earn a fitness industry credential. The Certified Personal Training credential will allow students to enter the high-demand market of personal training, which is a potential pathway to other careers in fitness such as athletic training, sports medicine, and physical therapy.

Mathematics

Algebra I, Part 1*   542000
Grade(s): 9-12   Credit: 1
Prerequisite: Mathematics 8
     Algebra I, Part I supports and promotes student success in mathematics coursework necessary to fulfill graduation requirements. While strengthening prerequisite skills in the areas of operations with whole numbers, fractions, decimals, percentages, integers, and rational numbers, algebraic concepts are solidified through modeling and the use of manipulatives, graphing calculators, and computer software where appropriate. A concentration on improving problem solving and communication in mathematics builds student confidence. Students may earn one mathematics credit for the Standard Diploma with Credit Accommodations by successfully completing Algebra I, Part 1.

Algebra I, Part 2*   543000
Grade(s): 9-12   Credit: 1
(if completed in conjunction with Algebra I, Part 1)
Prerequisite: Algebra I, Part 1
`SOL Test` Algebra I, Part 2 supports and promotes student success in mathematics coursework necessary to fulfill graduation requirements. The study of linear and quadratic equations, linear inequalities, systems of equations, and functions inherent in Algebra are emphasized in the course.
     Graphing calculators and other emerging technologies are used to facilitate problem solving, data analysis, and transformational graphing. Students should consult with their school counselor about the credits that may be used to fulfill the mathematics requirements for a high school diploma.

     *These courses may only be used as mathematics credits to fulfill the requirements of a Standard Diploma with Credit Accommodations.

Algebra I   540000
Virtual Loudoun   540V00
Grade(s): 9-12   Credit: 1
Prerequisite: Completion of Foundations of Algebra, Pre-Algebra, or Grade 8 Mathematics
`SOL Test` Algebra I incorporates concepts and skills necessary for students to pursue the study of rigorous advanced mathematics. The arithmetic properties of numbers are extended to include the development of the real number system. The fundamental concepts of equality, functions, multiple representations, probability, and data analysis guide the activities that allow students to enhance problem solving skills.
     Computers and graphing calculator technologies are incorporated into the curriculum in order to allow students opportunities to explore concepts, provide visual models to support the learning of algebraic concepts, and as powerful tools for solving and verifying solutions to equations and inequalities. Mathematical communication and reasoning are emphasized throughout the course.

Algebra Intervention   557700
Grade(s): 9-12   Credit: 0.5
Corequisite: Algebra I and teacher recommendation
     Algebra Intervention is designed to provide students with tools to help them master topics found on the end of year Algebra I SOL exam. This course will address topics in operations and linear equations, inequalities, linear functions, and data organizations. Students will use functions to represent, model, analyze, and interpret relationships in problem situations.
This course will be assigned as needed. Credit from this course does not count toward the math graduation requirement.

Algebra I Double Block, Part 1   542101
Grade(s): 9-12   Math Credit: 0.5
Algebra I Double Block, Part 1   542102
Grade(s): 9-12   Elective Credit: 0.5
Algebra I Double Block, Part 2   543101
Grade(s): 9-12   Math Credit: 0.5
Algebra I Double Block, Part 2   543102
Grade(s): 9-12   Elective Credit: 0.5

SOL Test This course is a full-year, two-credit, daily Algebra course. It supports and promotes student success in mathematics coursework necessary to fulfill graduation requirements. While strengthening prerequisite skills, algebraic concepts are solidified through modeling and the use of manipulatives, graphing calculators, and computer software where appropriate. A concentration on improving problem solving and communication in mathematics builds student confidence.

Students must be concurrently enrolled in Algebra I Double Block, Part 1 – Math 0.5 credit and Algebra I Double Block, Part 1 – Elective 0.5 credit during the first semester. During the second, the student must be concurrently enrolled in Algebra I Part 2 – Math 0.5 credit and Algebra I Double Block Part 2 – Elective 0.5 credit. The student has the potential to earn 1 math credit and 1 elective credit.

Personal Living and Finance   591070
Grade(s): 9-12   Credit: 1
Prerequisite: Mathematics 8

Personal Living and Finance is a course intended to help students prepare for the world of work. Practical applications are used throughout the course to provide real-world examples of computation. Simulations in the course include such topics as buying a car, renting an apartment, managing a budget, taxes, using credit wisely, investments, and insurance.

This course is only used to fulfill the mathematics requirements for a Modified Standard Diploma or Applied Studies diploma.

Geometry   550000
Virtual Loudoun   550V00
Grade(s): 9-12   Credit: 1
Prerequisite: Algebra I

SOL Test Geometry is the combined study of plane, solid, and coordinate geometric concepts that provide students with the skills necessary for the study of advanced mathematics. Investigations of lines, planes, congruence, similarity, areas, volumes, circles, and three-dimensional shapes are incorporated to provide a complete course of study. Formal and informal deductive reasoning skills are developed and applied to the construction of formal proofs. An emphasis on reasoning, problem solving, and proof is embedded in the course and includes two-column proofs, paragraph proofs, and coordinate proofs.

Computers and graphing calculator technologies are incorporated into the curriculum in order to allow students opportunities to explore concepts, engage in inquiry-based learning, provide visual models to support the learning of geometric concepts, and as powerful tools for solving and verifying solutions to equations and inequalities. Mathematical communication and reasoning are emphasized throughout the course.

Functions, Algebra, and Data Analysis   565000
Grade(s): 9-12   Credit: 1
Prerequisite: Algebra I

Designing experiments and building mathematical models to describe the experimental results allow students to strengthen conceptual understandings of linear, quadratic, exponential, and logarithmic functions. Within the context of mathematical modeling and data analysis, students study functions and their behaviors, systems of inequalities, probability, experimental design and implementation, and analysis of data.

Data is generated by practical applications arising from science, business, and finance. Students solve problems that require the formulation of linear, quadratic, exponential, or logarithmic equations or a system of equations. Through the investigation of mathematical models and interpretation/analysis of data from real life situations, students strengthen conceptual understandings in mathematics and further develop connections between algebra and statistics.

Graphing calculators and other emerging technologies are incorporated into instruction to enhance teaching and learning. Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Algebra II 560000
Virtual Loudoun 560V00
Grade(s): 9-12 Credit: 1
Prerequisite: Algebra I and Geometry
      Algebra II provides a thorough study of functions, including parent functions, families of functions, and transformational graphing. Transformational graphing uses translations, reflections, dilations, and rotations to generate a family of graphs from a parent graph. The continued study of equations, systems of equations, inequalities, and systems of inequalities builds on Algebra I concepts while polynomials, imaginary numbers in the complex number system, and sequences and series allow additional opportunities for modeling and practical applications.
      Graphing calculators and other emerging technologies are incorporated into instruction to enhance teaching and learning. Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Algebra II/Trigonometry H 571000
Virtual Loudoun H 571V00
Grade(s): 9-12 Credit: 1
Prerequisite: Algebra I and Geometry
`SOL Test` Algebra II/Trigonometry provides a thorough study of functions, including parent functions, families of functions and transformational graphing. Transformational graphing uses translations, reflections, dilations, and rotations to generate a family of graphs from a parent graph. The continued study of equations, systems of equations, inequalities, and systems of inequalities builds on Algebra I concepts while polynomials, imaginary numbers in the complex number system, matrices, and sequences and series allow additional opportunities for modeling and practical applications.
      The study of trigonometry includes trigonometric definitions, applications, equations, and inequalities. The connections between right triangle ratios, trigonometric functions, and circular functions are emphasized.
      Graphing calculators and other emerging technologies are incorporated into instruction to enhance teaching and learning. Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Statistics and Probability 597700
Grade(s): 10-12 Credit: 0.5
Prerequisite: Algebra II
      Elementary probability and statistics are studied with an emphasis on collecting data and interpreting data through numerical methods. Specific topics include the binomial and normal distributions, probability, linear correlation and regression, and other statistical methods. Students are expected to understand the design of statistical experiments. They are encouraged to study a problem, design and conduct an experiment or survey, and interpret and communicate the outcomes. Through meaningful activities and simulations, students are provided with experiences that model the means by which data are collected, used, and analyzed. This course enables students to be wise users of statistical materials.
      Graphing calculators and other emerging technologies are incorporated into instruction to enhance teaching and learning. Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Discrete Mathematics 599700
Grade(s): 10-12 Credit: 0.5
Prerequisite: Algebra II
      Discrete Mathematics involves applications using discrete variables rather than continuous variables. Modeling and understanding finite systems is central to the development of the economy, the natural and physical sciences, and mathematics itself.
      This course introduces the topics of social choice as a mathematical application, matrices and their uses, graph theory and its applications, and counting and finite probability, as well as the processes of optimization, existence, and algorithm construction.
      Graphing calculators and other emerging technologies are incorporated into instruction to enhance teaching and learning. Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Advanced Functions and Modeling   572000
Grade(s): 10-12   Credit: 1
Prerequisite: Algebra II

Advanced Functions and Modeling provides opportunities for students to deepen understanding and knowledge of functions-based mathematics through investigations of mathematical models and interpretation/analysis of data from real-life situations. Problem solving and critical thinking provide the structure in which functions (polynomial, exponential, logarithmic, transcendental, and rational) are studied. Experimental design provides the foundation for data gathering, curve sketching, and curve fitting in order to provide a graphical interpretation of real-world situations.

Graphing calculators and other emerging technologies are incorporated into instruction to enhance teaching and learning. Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Precalculus   585000
Virtual Loudoun   585V01
Grade(s): 10-12   Credit: 1
Prerequisite: Algebra II

Advanced Algebra/Precalculus emphasizes polynomial, exponential, logarithmic, and rational functions, theory of equations, sequences and series, conic sections, limits, mathematical induction, and the Binomial Theorem. Trigonometry topics include triangular and circular definitions of the trigonometric functions, establishing identities, special angle formulas, Law of Sines, Law of Cosines, and solutions of trigonometric equations. Constructing, interpreting, and using graphs of the various function families are stressed throughout the course of study. Students are encouraged to explore fundamental applications of the topics studied with the use of graphing calculators.

Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Mathematical Analysis H   586000
Virtual Loudoun H   58670V
Grade(s): 9-12   Credit: 1
Prerequisite: Algebra II/Trigonometry or Precalculus

Mathematical Analysis introduces mathematical induction, matrix algebra, vectors, and the Binomial Theorem. A detailed treatment of function concepts provides opportunities to explore mathematics topics deeply and to develop an understanding of algebraic and transcendental functions, parametric and polar equations, sequences and series, conic sections, and vectors. Mathematical Analysis also includes precalculus topics such as limits and continuity, the derivative of functions of a single variable, and curve sketching. The course of study is enhanced by making connections to the concepts presented to other disciplines.

Students routinely use graphing calculators as tools for exploratory activities and for solving rich application problems. Mathematical communication, reasoning, problem solving, critical thinking, and multiple representations are emphasized throughout the course.

Calculus   586200
Grade(s): 10-12   Credit: 1
Prerequisite: Precalculus or Math Analysis

This course introduces calculus with the study of elementary functions, limits, and integral and differential calculus. Topics include: techniques and applications of the derivative, definite integral, and the Fundamental Theorem of Calculus.

This course is piloted in select schools.

Computer Mathematics –
Introduction to Computer Science   593000
Grade(s): 9-12   Credit: 1
Co-requisite: Algebra II

Computer Mathematics serves as an introduction to Computer Science and to object-oriented programming using JAVA. Students will learn to design graphical interfaces, write browser applets, and create their own games using the principles of OOP (object-oriented programming) using user defined objects, encapsulation of data, and libraries. Students develop and refine skills in logic, organization, and precise expression, thereby enhancing learning in other disciplines. Programming is introduced in the context of mathematical concepts and problem solving. Students define a problem; develop, refine, and implement a plan; and test and revise the solution.

AP Computer Science A 595100
Grade(s): 10-12 Credit: 1
Prerequisite: Computer Mathematics and Algebra II or Principal permission

AP Computer Science A is taught according to the syllabus for Computer Science A, available through the College Entrance Examination Board. Major topics in the course include programming methodology, algorithms, and data structures. Topics are extended to include constructs, data types, functions, testing, debugging, algorithms, and data structures. The JAVA programming language is used to implement computer-based solutions to meaningful problems. Treatments of computer systems and the social implications of computing are integrated into the course.

Students have the opportunity to take the AP Computer Science A exam in May with the possibility of earning college credit.

AP Calculus AB 585100
Grade(s): 11-12 Credit: 1
Prerequisite: Mathematical Analysis or Precalculus

AP Calculus AB explores the topics of limits/continuity, derivatives, and integrals. These ideas are examined using a multilayered approach, including the verbal, numerical, analytical, and graphical analysis of polynomial, rational, trigonometric, exponential, and logarithmic functions and their inverses. The student is expected to relate the connections among these approaches. Students are also required to synthesize knowledge of the topics of the course to solve applications that model physical, social, and/or economic situations. These applications emphasize derivatives as rates of change, local linear approximations, optimizations and curve analysis, and integrals as Reimann sums, area of regions, volume of solids with known cross sections, average value of functions, and rectilinear motions. Emerging technologies are incorporated into the curriculum as they become available.

Students have the opportunity to take the AP Calculus AB exam in May with the possibility to earn college credit.

AP Calculus BC 586100
Grade(s): 11-12 Credit: 1
Prerequisite: Mathematical Analysis or Calculus AB – Advanced Placement

Advanced Placement Calculus BC is intended for students who have a thorough knowledge of analytic geometry and elementary functions in addition to college-preparatory algebra, geometry, and trigonometry. Although all of the elements of the AP Calculus AB course are included, the course provides a more rigorous treatment of these introductory calculus topics. The course also includes the development of the additional topics required by the College Entrance Examination Board in its syllabus for AP Calculus BC. Among these are parametric, polar, and vector functions; the rigorous definition of limit; advanced integration techniques; Simpson's Rule; length of curves; improper integrals; Hooke's Law; and the study of sequences and series. The use of the graphing calculator is fully integrated into instruction and students are expected to confirm and interpret results of problem situations that are solved using available technology. Emerging technologies are incorporated into the curriculum and as they become available.

Students have the opportunity to take the AP Calculus BC exam in May with the possibility to receive college credit.

AP Statistics 598100
Grade(s): 9-12 Credit: 1
Prerequisite: Algebra II

The AP Statistics course explores the concepts and skills according to the syllabus available through the College Entrance Examination Board. These topics include collecting and interpreting data through numerical methods, binomial and normal distribution, probability, linear correlation and regression, analysis of variance, and other descriptive statistical methods. Students should be able to transform data to aid in data interpretation and prediction and test hypotheses using appropriate statistics. Emerging technologies are incorporated into the curriculum as they become available.

Students have the opportunity to take the AP Statistics exam in May with the possibility of earning college credit.

Multivariable Calculus 583002
Multivariable Calculus DE 583006
Grade(s): 11-12 Credit: 1
Prerequisite: Calculus BC – Advanced Placement (students must receive a 3 or higher on the AP exam)

Multivariable Calculus (also known as multivariate calculus) is the extension of calculus in one variable to calculus in several variables. Topics may include Euclidean 3-space, vector functions, derivatives and curvature and torsion, R^n space, surface normal, the Taylor polynomial, power and Taylor series, multivariable integration, vector function integration, and theorems by Gauss, Green, and Stokes.

Science

All science classes listed are laboratory science courses. Earth Science, Biology, and Chemistry all require the Virginia Standards of Learning (SOL) tests near the end of the courses.

Students seeking a Standard diploma must complete a minimum of three science classes in two different disciplines. Students seeking Advanced Studies Diplomas must complete a minimum of four science classes in three different disciplines.

Because requirements for college admission and for specific majors in college differ greatly, students should check with colleges of interest to determine the science courses most appropriate to their goals of future education and potential college majors.

Earth Science Academic   640300
Virtual Loudoun   640V00
Grade(s): 9-10   Credit: 1
Prerequisite: None
`SOL Test` Earth Science is a study of the interrelationships between the Earth's composition, structure, processes, and history and its atmosphere, meteorology, oceanography, and astronomy. Various scientists and their contributions are studied.

Students interpret various maps, charts, and tables and utilize technology, including GIS and GPS to organize and analyze data. Facility in using many different kinds of maps and graphics is a major outcome of learning earth science. Students also consider costs and benefits of using the Earth's resources in problem-solving situations.

Research Earth Science Honors   640200
Grade(s): 9-10   Credit: 1
Prerequisite: None
`SOL Test` Earth Science is a study of the interrelationships between the Earth's composition, structure, processes, and history and its atmosphere, meteorology, oceanography, and astronomy. Various scientists and their contributions are studied.

Research Earth Science is designed to give students multiple experiences conducting research as a means to develop and reinforce earth science content knowledge and scientific thinking.

Students interpret various maps, charts, and tables and utilize technology, including GIS and GPS to organize and analyze data. Students learn the role that scientific evidence and scientific thinking plays in development of new scientific knowledge in the earth science disciplines.

Students begin to develop expertise needed to conduct in-depth scientific research. In particular, students gain the ability to collect and communicate data with descriptive statistics and graphical representations. In addition, students learn skills to use data and scientific knowledge to develop conclusions about their research questions.
All Research Earth Science students are expected to complete an in-depth, independent Science Research Investigation (SRI) as a required part of their course work.

Research Earth Science students may participate in the process leading to possible selection for participation in the Loudoun County Regional Science and Engineering Fair (RSEF).

Astronomy Virtual Loudoun   64057V
Grade(s): 11-12   Credit: 1
Prerequisite: Earth Science

In Astronomy, students examine the universe and Earth's place in it. Beginning with a basic introduction to astronomy, this course covers the known universe, including the sun, stars, radiation and the electromagnetic spectrum, the larger Solar System and how astronomy influences everyday life. Through media-rich content, engaging assessments, simulations, and scientific investigations, students explore this sub-section of Earth Science throughout history and the universe.

This course counts as an Earth Science credit.

Oceanography Virtual Loudoun   64000V
Grade(s): 11-12   Credit: 1
Prerequisite: Earth Science

In this Oceanography course, students take a journey through the ocean world – the planet earth is approximately 71% ocean water. Oceanography is a discipline of science that records and describes the features of the oceans. Unlike the sciences of geology, biology, chemistry, and physics, oceanography uses a different approach and is a combination of these four sciences in the ocean realm; however, oceanography also involves engineering to develop devices that will take scientists to the depths and everywhere underwater. In this on-line course, students gain an understanding of oceanography through media-rich interactivities, videos, collaborative discussions, hands-on applications, scientific investigations, and real-world projects.

This course counts as an Earth Science credit.

Biology Academic 650300
Virtual Loudoun 650V00
Grade(s): 10 Credit: 1
Prerequisite: None

`SOL Test` Students taking Biology gain detailed knowledge of living systems. Areas of study include cellular organization and processes, molecular biology, classification of organisms, genetics, evolution, and ecosystems.

Students are expected to be able to demonstrate proper use of laboratory tools. Controlled experiments are performed, and results are reported. The importance of science research is emphasized.

Research Biology Honors 650200
Grade(s): 9-10 Credit: 1
Prerequisite: None

`SOL Test` Students taking Biology gain detailed knowledge of living systems. Areas of study include cellular organization and processes, molecular biology, classification of organisms, genetics, evolution, and ecosystems.

Research Biology is designed to give students multiple experiences conducting science research as a means to develop biology content knowledge and scientific thinking. Students interpret biological information and utilize technology, and biological protocols to organize and analyze data.

Students learn the role that scientific evidence and scientific thinking plays in development of new scientific knowledge in the field of biology. Students are expected to collect and communicate data with descriptive statistics and graphical representations. In addition, students answer research questions using scientific data and draw conclusions using their biological content knowledge.

During Research Biology, students develop the science thinking and process skills required to generate a scientific research question and design an investigation to collect data that will answer their question. Additionally, students develop a deeper understanding of the role of inferential statistics in data analysis and drawing conclusions.

All Research Biology students are expected to complete an in-depth, independent Science Research Investigation (SRI) as a required part of their course work.

Research Biology students may participate in the process leading to possible selection for participation in the Loudoun County Regional Science and Engineering Fair (RSEF).

AP Biology 655100
Grade(s): 10-12 Credit: 1
Prerequisite: Biology Research or Academic and Chemistry Research or Academic (completed or taken concurrently).

This advanced course is a college-level, fast-paced course that follows the course outline of the College Board's AP program.

The course emphasizes cellular biology, biochemical processes or cellular respiration and photosynthesis, vertebrate anatomy and physiology, advanced genetics, evolution, plant anatomy and physiology, and ecology.

Students have the opportunity to take the AP Biology exam in May with the possibility of earning college credit.

Biology DE/AP 6551DE
Grade(s): 10-12 Credit: 1
Prerequisite: Biology Research or Academic and Chemistry Research or Academic (competed or taken consecutively).

LCPS provides students the opportunity to earn college credit while fulfilling the AP Biology course requirements. Dual Enrollment/Advanced Placement Biology is a rigorous, college-level course that not only follows the course outline of the College Board's AP program but also two full semester of college biology (also fulfills college biology laboratory course requirements).

The course emphasizes cellular biology, biochemical processes of cellular respiration and photosynthesis, vertebrate anatomy and physiology, advanced genetics, evolution, plant anatomy and physiology, and ecology.

Biology DE/AP is taught by LCPS teachers who are also adjunct faculty members at participating colleges. Students will also have the opportunity to take the AP Biology exam in May.

Chemistry 660000
Virtual Loudoun 660V00
Grade(s): 10-12 Credit: 1
Prerequisite: Algebra I

`SOL Test` Chemistry students develop an appreciation for the interaction between matter and energy.

Students investigate the structure, properties, and reactions of matter. Classroom study is balanced with laboratory experiences to deepen the students' understanding of Chemistry.

Analytical experimental investigations are conducted using the scientific method, and proper safety precautions are employed. Students investigate kinetic theory, the Periodic Table stoichiometry, reactions and equations, and chemical equilibrium. Students report findings of both qualitative and quantitative data using effective communication skills, correct expression of significant figures and error, and factor labeling in problem solving.

Chemistry is designed as a challenging course requiring advanced reading and writing skills.

Research Chemistry Honors   661000
Grade(s): 10-12   Credit: 1
Prerequisite: Algebra I
SOL Test Research Chemistry is designed to give students multiple experiences conducting science research as a means to develop chemistry content knowledge and scientific thinking. Students interpret chemical information and utilize technology and chemistry protocols to organize and analyze data. Students learn the role that scientific evidence and scientific thinking plays in development of new scientific knowledge in the field of chemistry. Students are expected to collect and communicate data with descriptive statistics and graphical representations. In addition, students answer research questions using scientific data and draw conclusions using their chemical content knowledge. During Research Chemistry, students develop the science thinking and process skills required to generate scientific research question and design an investigation to collect data that will answer their question. Additionally, students develop a deeper understanding of the role of inferential statistics in data analysis and drawing conclusion.
        All Research Chemistry students are expected to complete an in-depth, independent Science Research Investigation (SRI) as a required part of their course work.
        Research Chemistry students may participate in the process leading to possible selection for participation in the Loudoun County Regional Science and Engineering Fair (RSEF).

AP Chemistry   665100
Grade(s): 11-12   Credit: 1
Prerequisite: Biology Research or Academic and Chemistry Research or Academic completed or taken
        This advanced course is a college-level, fast-paced course in Chemistry that follows the course outline of the College Board's AP Chemistry program. The course includes many extended lab procedures. In addition, such fields as organic chemistry, biochemistry, nuclear chemistry, coordination complexes, and semi-micro qualitative analysis are introduced.
        Students have the opportunity to take the AP Chemistry exam in May with the possibility of earning college credit.

Chemistry DE/AP   6651DE
Grade(s): 10-12   Credit: 1
Prerequisite: Biology Research or Academic and Chemistry Research or Academic
        LCPS provides students the opportunity to earn college credit while fulfilling the AP Biology course requirements. Dual Enrollment/Advanced Placement Chemistry is a rigorous, college-level course that not only follows the course outline of the College Board's AP program but also two full semester of college chemistry (also fulfills college chemistry laboratory course requirements).
        This course emphasizes the fundamental laws, theories and mathematical concepts of chemistry and atomic structure and chemical periodicity, stoichiometry, thermochemistry, organic chemistry, biochemistry, nuclear chemistry, coordination complexes, and explores semi-micro qualitative analysis.
        Chemistry DE/AP is taught by LCPS teachers who are also adjunct faculty members at participating colleges. Students will also have the opportunity to take the AP Chemistry exam in May.

Environmental Science   656000
Grade(s): 11-12   Credit: 1
Prerequisite: Two science credits (Earth Science and Biology suggested)
        Environmental Science provides the opportunity to synthesize information and knowledge of physics, chemistry, earth science, and biology while developing the Naturalist Intelligence. Students gain an understanding of ecological concepts including air, water, soil, biological diversity, and human impacts.
        Inquiry skills are developed through fieldwork, service projects, and collaborative investigation while using appropriate technology. Because of the interdisciplinary focus of the course, students are challenged with diverse topics, rigorous reading requirements, and opportunities for written and oral presentations.

AP Environmental Science   674200
Grade(s): 11-12   Credit: 1
Prerequisite: Earth Science Academic or Research, and Biology Academic or Research
        This advanced course is a college-level, fast-paced course follows the course outline of the College Board's AP program. The goal of AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them.
        Students have the opportunity to take the AP Environmental Science exam in May with the possibility of earning college credit.

Conceptual Physics   673000
Grade(s): 10-12   Credit: 1
Prerequisite: Algebra I

Students build on basic physical science principles by in-depth exploration of the nature and characteristics of energy and its electricity and magnetism, waves and optics, and nuclear energy.

The course draws connections between the concepts of physics and many everyday applications.

Students who are awarded a credit for Conceptual Physics cannot receive an additional credit for Physics 670000.

Physics H   671000
Virtual Loudoun   670V00
Grade(s): 11-12   Credit: 1
Prerequisite: Algebra II

This course uses a highly mathematical approach. Students learn and use many algebraic and trigonometric concepts while investigating physics content. Laboratory work includes graphical analysis. Topics include mechanics, electricity and magnetism, waves and optics, the Special Theory of Relativity, and atomic structure.

Physics is designed as a challenging course requiring advanced reading, writing, and mathematical skills.

Students who have previously completed Conceptual Physics are not awarded another science credit for taking Physics 670000.

AP Physics C: Mechanics   675100
Grade(s): 11-12   Credit: 1
Prerequisite: Physics
Corequisite: Calculus

This course is a college-level, fast-paced course in Physics that follows the course outline of the College Board's AP Physics program. Emphasis is placed on mechanics. Students study concepts in each of the following six content areas: kinematics; Newton's laws of motion; work, energy, and power; systems of particles and linear momentum circular motion and rotation; and oscillations and gravitation.

Pre-Calculus and Calculus are used to develop concepts and solve problems.

Students have the opportunity to take the AP Physics C exam in May with the possibility of earning college credit.

Physics DE   670016
Grade(s): 11-12   Credit: 1
Prerequisite: Algebra II

Dual Enrollment Physics is a rigorous, college-level course that uses a highly mathematical approach (also fulfills college physics laboratory course requirements). Students learn and use many algebraic and trigonometric concepts while investigating physics content. Laboratory work includes graphical analysis. Topics include mechanics, electricity and magnetism, waves and optics, the Special Theory of Relativity, and atomic structure

DE Physics is designed as a challenging course requiring advanced reading, writing, and mathematical skills. Students who have previously completed Conceptual Physics are not awarded another science credit for taking DE Physics.

DE Physics is taught by LCPS teachers who are also adjunct faculty members at participating colleges.

Geospatial Science   670201
Grade(s): 12   Credit: 1
Geospatial Science DE   670206
Grade(s): 11-12   Credit: 1
Prerequisite: None

Geospatial science involves the use of geographic information systems (GIS) which integrate hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically-referenced information. In this course, GIS is used to organize, analyze, and communicate spatial-data relationships.

In the first semester, students learn about GIS tools and acquire the essential skills necessary to use GIS software and hardware effectively. These computer/software skills form the foundation of the course and are used extensively as students conduct independent research later in the course. Teacher-directed activities gradually lead to more student-directed research.

All students are expected to complete an in-depth research project as a required part of their course work during the second semester.

Students may also choose a Dual Enrollment option offered through a partnership with James Madison University's Department of Geology and Geography. Students have the opportunity to earn 6 college credits from JMU while completing the in-depth research project. The project (mandatory for all students regardless of whether they choose the Dual Enrollment option requires students to apply all skills acquired during the first semester, identify a suitable independent research topic, and demonstrate their ability to complete and present their project to school faculty, members of the GIS community, and JMU faculty and staff. To earn the 6 credit hours, students must meet or exceed the project expectations established by JMU.

This course cannot be used to satisfy one of the science requirements for the Standard or Advanced Studies Diploma.

Geospatial Science II DE   670306
Grade(s): 12   Credit: 1
Prerequisite: Completion of Geospatial Science and approval of JMU faculty

        Students enrolled in Geospatial Science II deepen their expertise gained in Geospatial Science with an emphasis on acquiring advanced skills to capture, manage, analyze, and display geographically referenced information. These skills include: displaying and analyzing data, building and working with databases, understanding and incorporating geographic and projected coordinate systems, and using remote sensing and LiDAR data.

        All students are expected to complete an in-depth research project as a required part of their course work during the year, with expectations of submitting their work into various competitions.

        Geospatial Science II is a dual Enrollment course offered through a partnership with James Madison University's Department of Geology and Geography. Students have the opportunity to earn 6 college credits from JMU while completing the in-depth research project. The research project requires students to apply all skills acquired during the Geospatial Science, identify a suitable independent research topic, and demonstrate their ability to complete and present their project to school faculty, members of the GIS community, and JMU faculty and staff. To earn the 6 credit hours, students must meet or exceed the project expectations established by JMU.

        This course cannot be used to satisfy one of the science requirements for the Standard or Advanced Studies Diploma.

Independent Science Research   680000
Independent Science Research DE   680106
Grade(s): 11-12   Credit: 1
Prerequisite: Completion of at least two sciences in different disciplines (to be chosen from Earth Science, Biology, Chemistry, Physics, of AP Sciences)

        This elective science course is intended for juniors and seniors interested in continuing their study through an independent project in science, engineering, mathematics, or computer science. Students participating in Independent Science Research (ISR) should have a significant science background prior to entering the course. ISR projects are subject to considerable peer and teacher review during all phases of development.

        The focus of this course is on sustained, scientific inquiry. Students are expected to take responsibility for project development, meeting timelines, collecting data, defending procedures, and presenting results.

        The instructor advises students on the research process, information sources, and contacts. Instruction is also provided on such topics as data collection and presentation, statistical interpretation of results, protocols for research, and presentation skills.

        All ISR students are required to participate in the process leading to possible selection for participation in the Loudoun county Regional Science and Engineering Fair.

        All students are expected to complete an in-depth research project as a required part of their course work.

        Students may choose a Dual Enrollment option offered through a partnership with George Mason University College of Science. Students must have at least a 3.0 GPA in order to be considered for the Dual Enrollment section. Students choosing the Dual Enrollment option must complete a transcript release at the time of course selection. The transcript release allows GMU access to review their transcripts as part of the application process. Students have the opportunity to earn 3 college credits from GMU while completing the in-depth research project. The project (mandatory for all students regardless of whether they choose the Dual Enrollment option) requires students to identify a suitable research topic, develop an investigation design and demonstrate their ability to complete and present their project o LCPS, GMU faculty and staff and the scientific community. To earn the 3 credits, students must meet or exceed the project expectations established by GMU.

        Students working toward an Advanced Studies Diploma must also complete 3 science courses from different disciplines in order to acquire the 4 required science credits (to be chosen from Earth Science, Biology, Chemistry, Physics, or AP Sciences).

Independent Science Research II DE   680206
Grade(s): 12   Credit: 1
Prerequisite: Completion of Independent Science Research DE

        This elective science course is intended for seniors interested in either 1) continuing their study of an independent project in science, engineering, mathematics, or computer science initiated in the first Independent Science Research DE course; or 2) beginning a new independent project in science, engineering, mathematics, or computer science.

        Students will participate in all aspects of sustained, scientific inquiry at a more advanced level including taking responsibility for project development, meeting timelines, collecting data, defending procedures, and presenting results. All students are expected to complete an in-depth research project as a required part of their course work.

        All ISR students are required to participate in the process leading to possible selection for participation in the Loudoun County Regional Science and Engineering Fair. Students must have at least a 3.0 GPA in order to be considered for the Dual Enrollment section. Students must complete a transcript release at the time of course selection. The transcript release allows GMU access to review their transcripts as part of the Dual Enrollment application process. Students have the opportunity to earn 3 college credits from GMU while completing the in-depth research project. The project requires students to identify a suitable research topic, develop an investigation design and demonstrate their ability to complete and present their project to LCPS, GMU faculty and staff, and the scientific community. To earn the 3 credits, students must meet or exceed the project expectations established by GMU.

        Students working toward an Advanced Studies Diploma must also complete 3 science courses from different disciplines in order to acquire the 4 required science credits (to be chosen from Earth Science, Biology, Chemistry, Physics, or AP Sciences).

Social Science and Global Studies

World History/Geography to 1500
Academic   740300
Virtual Loudoun   740V00
Grade(s): 9   Credit: 1
Prerequisite: None

In this course, students learn to think critically about world events and societies around the globe before the year 1500. They learn to think in an organized way to understand history and to express themselves in all forms of writing, both formal and informal.

This is a course in the human history of the world that asks the following questions: What changes and events have caused people to live the way they do today? What progress have humans made? What problems have humans faced? What problems still exist today?

Introduction to AP World History/Geography to 1500 H   740900
Grade(s): Sequenced for Grade 9   Credit: 1
Prerequisite: None

Starting with the human communities of early world history, this course teaches students to think critically about large global patterns and themes and to compare human characteristics across time and geographic locations. Students learn about people in different places and environments from 8000 BCE to 1500 CE and gain understanding of the connections and differences between human beings as they study historical trends and events.

Since writing is a thinking process, all forms of writing, both formal and informal, are emphasized in this course. Students learn to understand and use primary sources as historical evidence to conduct research and produce essays.

This is a course in global history and serves as the foundation course for the 10th grade AP World History class.

World History/Geography 1500 to present
Academic   745300
Virtual Loudoun   745V00
Grade(s): 10   Credit: 1
Prerequisite: None

Today, individuals live in a global world that allows them to log on to a computer and talk live to other students in China, India, or South Africa. World History helps students understand how different societies developed the way they did and prepares students to live in a global, interconnected society.

In World History II, students expand their ability to think clearly and carefully about social and historical forces that have shaped the world. They compare the roles of different groups of people, including young people, in different times and places. They learn to think in an organized way to understand history and to express themselves in all forms of writing, both formal and informal.

This course assists students in the study of modern human history by posing the questions: What changes and events have caused people to live the way they do today? What progress have humans made? What problems still exist today? What solutions to these problems can individuals of today offer?

AP World History   751000
Grade(s): 10-12 (Sequenced for Grade 10)   Credit: 1
Prerequisite: World History/Geography

Today, individuals live in a global world that allows them to log on to a computer and talk live to other students in China, India, or South Africa. AP World History helps students understand how different societies developed the way they did and prepares students to live in a global, interconnected society.

In AP World History, students expand their ability to think clearly and carefully about social and historical forces that have shaped their lives. They compare the roles of different groups of people, including young people, in different times and places.

Students learn to think in an organized way to understand history and to express themselves in all forms of writing, both formal and informal. They also have a chance to complete an inquiry-based project on a World History topic of personal interest.

This course teaches students to think critically and to develop the ability to use evidence to make arguments and draw conclusions.

Students have the opportunity to take the AP World History exam in May with the possibility of earning college credit.

United States and Virginia History
Academic   750300
Virtual Loudoun   750V70
Grade(s): 11   Credit: 1
Prerequisite: None

     In U.S./Virginia History students expand their ability to think clearly and carefully about social and historical forces that have shaped their lives. Students compare the roles of different groups of people, including young people, in different times and regions. They learn to think in an organized way to understand history and to express themselves in all forms of writing, both formal and informal.

     In this class, students are expected to develop their ability to independently use historical evidence to make arguments and draw conclusions. This course helps students improve their ability to think critically while examining how the people of America have met needs, formed communities, and developed into new, diverse, and complex societies.

United States History DE   750007
Grade(s): 11   Credit: 1
Prerequisite: None; students must pass entrance/skills test

     In Dual Enrollment U.S. History, students will develop their skills and their knowledge base to function successfully in this college-level class. Requirements for Loudoun County Public Schools and Northern Virginia Community College will have to be met by each student. The course will have university-level academic expectations, but with hard work and the support of our teachers, students will develop to meet the challenge and will earn college credit when they complete it.

     In this class, students will expand their ability to think analytically about social and historical forces that have shaped their lives. Students will address questions such as: How did a nation whose Constitution first included the 3/5 Compromise eventually come to have an African-American President in 2009?

     Students will compare the roles of different groups of people in different times and regions. They will come to understand history as an investigation and will develop their abilities to express themselves in all forms of writing, both formal and informal.

     In Dual Enrollment U.S. History, students are expected to develop their ability to use historical evidence to make arguments and draw conclusions, and to improve their ability to think critically about the growth and development of the United States of America.

AP United States History   750100
Grade(s): 11   Credit: 1
Prerequisite: None

     In AP U.S. History, students expand their ability to think clearly and carefully about social and historical forces that have shaped their lives. They address questions such as: How did a nation whose Constitution first included the 3/5 Compromise eventually come to have an African-American President in 2009?

     Students compare the roles of different groups of people, including young people, in different times and regions. Students continue to learn to think in an organized way to understand history and to express themselves in all forms of writing, both formal and informal.

     In this class, students are expected to develop their ability to use historical evidence to make arguments and draw conclusions and to improve their ability to think critically about the formation of the United States of America.

     Students have the opportunity to take the AP U.S. History exam in May with the possibility to earn college credit.

United States/Virginia Government
Academic   760300
Virtual Loudoun   760V00
Grade(s): 12   Credit: 1
Prerequisite: None

     In U.S./Virginia Government, students expand their ability to think clearly and carefully about social and political forces that shape their lives. They continue to develop their thinking in an organized way for clear communication in all forms of writing, both formal and informal. They strengthen their independent ability to describe and make conclusions about government structures and policies.

     This course helps improve students' ability to think critically and to examine how the people of America meet their needs for constructive political life in a diverse society. Democracy depends on citizens paying attention and getting involved. The course prepares students to be thoughtful and active citizens of the United States.

United States/Virginia Government DE   760006
Grade(s): 12   Credit: 1
Prerequisite: None

In Dual Enrollment U.S. Government, students will develop their skills and their knowledge base to function successfully in this college level class. Requirements for Loudoun County Public Schools and Northern Virginia Community College will be met by each student. The course will have university-level academic expectations, but with hard work and the support of our teachers, students will develop to meet the challenge and will earn college credit when they complete it.

In this course, students expand their ability to think clearly and carefully about social and political forces that shape their lives. They continue to develop their thinking in an organized way for clear communication in all forms of writing, both formal and informal. They strengthen their independent ability to describe and make conclusions about government structures and policies. They will address and become informed about multiple issues facing our government and the processes through which it works, with the aim of becoming not only novice-scholars of democracy and republican government, but active, involved, responsible citizens.

This course helps improve students' ability to think critically and to examine how the people of America meet their needs for constructive political life in a diverse society.

Combination AP United States Government
and AP Comparative Government   762000
Grade(s): 12   Credit: 1
Prerequisite: None

This course combines AP U.S. and AP Comparative Government. The College Board curricula for both courses have been woven together to make this one coherent, year-long course. Students who seek the 1.0 weight must pass the entire year-long course. Students are encouraged to take both the AP U.S. Government and the AP Comparative Government exams in May. All students are prepared for both exams.

In AP Government, students expand their ability to think clearly and carefully about the social and political forces that shape their lives. Concepts which are considered include life under a political system where people are "guilty until proven innocent" and what it would be like to have an election where each office had only one candidate; these are different interpretations of "democracy." In this class, students study the principles of government in the U.S. and the institutions and laws used to make government work. They also compare U.S. systems and laws used to make government work. They also compare U.S. systems and laws to those of other countries, so students can examine how different societies define "justice" and those societies' notions of civil rights and civic responsibility.

Through the examination and comparison of government systems, students develop and improve their analytical skills, and they improve their ability to think in an organized way about very complex issues that involve many different types of people, groups, and institutions. Students also improve their communication skills since government is a social topic. Students' analytical writing and active listening skills are significantly developed as they improve their ability to participate in political debate with fairness and respect for diverse perspectives.

Students have the opportunity to take the AP U.S. Government and Comparative Government exams in May with the possibility of earning college credit.

Economics   782700
Virtual Loudoun   782V05
Grade(s): 10-12   Credit: 0.5
Prerequisite: None

In this course, students discover that basic economic principles are at work in life every day, and an understanding of these principles helps them to make better economic choices.

Students also learn how governments and private financial institutions impact their economic choices by the decisions they make about "who gets what" in a world with scarce resources.

Students must take a one-semester course in Economics and a one-semester course in Personal Finance in order to graduate. This course fulfills the Economics portion of the one-year requirement for graduation.

Social Science and Global Studies Electives

Survey of African History   741210
Grade(s): 11-12   Credit: 1
Prerequisite: None

Much of African history as people hear it consists of information beginning with when Europe began to interact with the continent of Africa, omitting much of the complete story of rich traditions, major events, and diverse cultures that stretch back far in time and across a huge land mass.

Students who want to learn about the history of this gigantic and diverse place and would like to look at history "through African eyes," should select this course. Students should be prepared to read, discuss, and write.

Survey of Latin American History   781100
Grade(s): 11-12   Credit: 1
Prerequisite: None

Latin America has more than 23 countries and even more cultural backgrounds. The largest country in Latin America does not speak Spanish but speaks Portuguese. Often, the United States' closest geographic neighbors are lumped together as one culture and considered to have only one "history." Complex histories, cultures, and social systems exist in this fascinating area, and they require serious study and examination to improve cultural understanding.

Students who want to learn about the history of this gigantic and diverse place and would like to look at history through the diverse perspectives of Latin America should select this course. They should be prepared to read, discuss, write, and learn.

AP Microeconomics/AP Macroeconomics   782000
Grade(s): 11-12   Credit: 1
Prerequisite: None

Students wishing to fulfill the Economics and Personal Finance graduation requirement with this course must compete both AP components: Micro and Macro.

The microeconomic component of this AP course provides students with a thorough understanding of the principles of economics that apply to individual decision makers, both consumers and producers, within the economic system. The primary focus of the course is to help individuals develop an understanding of markets and the role the government plays promoting greater efficiency and equity in the economy.

The macroeconomic component of this course provides students with a thorough understanding of the principles of economics as they apply to the economic system as a whole. This portion of the course focuses on national income and price-level determination and develops students' familiarity with economic performance measures, the financial sector, economic growth and stabilization policies, and international economics.

In this course, students are required to think critically about the complex issues surrounding a world with limited resources.

Students have the opportunity to take the AP Micro and Macro Economics exam in May with the possibility of earning college credit.

Global Social Issues   775000
Grade(s): 11-12   Credit: 0.5
Prerequisite: None

In Global Social Issues, students learn that people on this planet have numerous differences yet face issues and challenges which are connected. Issues that may seem to impact only one area may actually impact other people and societies across the globe.

In this course, students study how humans behave and interact with each other. In some instances, people and nations work together on environmental concerns, and in others, people and nations work at cross-purposes on the environment. Furthermore, with issues such as women's rights, students discover a wide spectrum of views and approaches according to a particular society's culture and history.

AP Human Geography   741100
Grade(s): 11-12   Credit: 1
Prerequisite: None

AP Human geography helps students analyze the world and their relationship to it. Students learn to look for geographic causes for events in different regions to compare geographic features and their effects on human life, and to see how their lives are connected to and affected by human and geographic conditions all over the globe. In this course, students write, read, discuss, and present issues of global and local importance. Students also learn about an important tool for Human Geography: GIS software. AP Human Geography prepares individuals to be part of the solution to the challenges facing humanity on Earth in the 21st Century.

Students have the opportunity to take the AP Human Geography exam in May with the possibility of earning college credit.

Modern International Relations   784700
Grade(s): 11-12   Credit: 0.5
Prerequisite: None

In this course, students examine the ways in which people and nations relate to each other and develop their own ideas about how the new global situation should be addressed. Students in this course must closely read and listen to the news, too, because people are moving and taking actions all the time in today's world, and lives are affected by people or events from beyond the national borders.

This course assists students in learning how they can contribute to the solutions to international problems and develop their own abilities to function on the increasingly interconnected globe.

Psychology   786700
Virtual Loudoun   786V00
Grade(s): 11-12   Credit: 0.5
Prerequisite: None

Psychology provides students with ideas about how to address many questions regarding human behavior. Psychologists provide biological, emotional, and situational reasons as answers to questions about human behavior. By studying those reasons, students gain a better understanding of why people do what they do and develop the ability to generate their own answers.

Psychology helps students think about human behavior in an organized way.

AP Psychology   787100
Grade(s): 11-12   Credit: 1
Prerequisite: None

Psychologists study all aspects of human behaviors: those that humans have in common with animals and those that humans do not, and those that range from peace-making to the microscopic functioning of a nerve cell. Students become psychologists in this course and expand their minds to analyze human behavior in methodical, organized, large-scale, small-scale, inquiry-based approaches. Students need to work hard to read about, understand, write about, discuss, and explain the ways humans behave.

Class participants study how humans learn, how humans inherit traits from their parents, how humans act in groups, why humans have emotions, and how humans sometimes engage in behaviors that are destructive.

Students have the opportunity to take the AP Psychology exam in May with the possibility of earning college credit.

The World of Ideas   741300
Grade(s): 11-12   Credit: 0.5
Prerequisite: None

This course focuses on three main philosophical questions:

- Is there a purpose to life?
- What is the definition of a human being?
- How can human beings know anything for sure?

In this course, students explore their answers to these questions by studying the answers given to them by a diversity of cultures and traditions across the globe.

Students who take this course will explore the world of ideas and may develop some ideas about their place in the universe or may generate many more questions they would like to explore.

World Religions   741400
Grade(s): 11-12   Credit: 0.5
Prerequisite: None

Teenagers of Aborigine heritage in Australia have traditionally gone through a "rite of passage" called a "Walkabout." They are meant to have a spiritual awakening in the Outback by surviving in the desert without supplies, and without even clothing, for one to two weeks. Students' own backgrounds may call for a "rite of passage" for them. Why do religions have rites of passages and other ceremonies? Why do they have different *types* of ceremonies?

In this course, students explore questions like those above and examine and compare the practices, faiths, and literature of the major religions in the world today. They do so with readings, videos, creative and analytical writing, and discussion. The many beautiful, meaningful, and inspirational forms of religion in the world explain much about the world views and cultures of the diversity of people living on the globe today. Students who take this course improve their understanding of the people who share this planet with them.

World Languages and Cultures

All public Virginia colleges and universities accept American Sign Language as fulfillment of the world language entrance requirement; however, some Virginia private colleges and out-of-state institutions of higher education do not accept American Sign Language courses for world language credit.

American Sign Language I (ASL)   380000
Grade(s): 9-12   Credit: 1
Prerequisite: None
Students learn basic ASL vocabulary and acquire knowledge of the manual alphabet. They also study the history of American Sign Language and the Deaf culture. Expressive and receptive language skills are practiced within the context of meaningful and experiential activities related to home, school, and community environments.

American Sign Language II   382000
Grade(s): 10-12   Credit: 1
Prerequisite: ASL I
Building on the rudiments learned in ASL I, students expand their vocabulary and increase their proficiency in expressive and receptive conversational skills using more complex grammatical structures.
Students continue their study of Deaf heritage and culture and are encouraged to interact with Deaf people.

American Sign Language III   383000
Grade(s): 11-12   Credit: 1
Prerequisite: ASL II
Through spiraling of concepts, structures, and functions acquired in ASL II, students improve their skills in functional contexts.
Students analyze authentic ASL literature such as storytelling, folklore, poetry, and drama. The study of the evolution of ASL and the maintenance of interpersonal relations with the Deaf community are an integral part of ASL III.

American Sign Language IV Honors   384800
Grade(s): 11-12   Credit: 1
Prerequisite: ASL III or teacher recommendation
In this advanced level course, students develop communicative and interactive competencies in the language through the use of major ASL grammatical features and expand knowledge of the Deaf community culture. The course will focus on ASL literature by incorporating ASL story analysis and storytelling techniques such as space, role-shifting, classifiers, idiomatic expressions, and non-manual signals. Culture is learning through readings and classroom discussions on global themes and topics. Contact with the Deaf community is required once per quarter to enhance linguistic and cultural knowledge.

American Sign Language DE   384506
Grade(s): 11-12   Credit: 1
Prerequisite: ASL III or teacher recommendation
In this advanced level course, students develop communicative and interactive competencies in the language through the use of major ASL grammatical features and expand knowledge of the Deaf community culture. The course will focus on ASL literature by incorporating ASL story analysis and storytelling techniques such as space, role-shifting, classifiers, idiomatic expressions, and non-manual signals. Culture is learning through readings and classroom discussions on global themes and topics. Contact with the Deaf community is required once per quarter to enhance linguistic and cultural knowledge.

French I   340000
Virtual Loudoun   34100V
Grade(s): 7-12   Credit: 1
Prerequisite: None
Students develop the ability to communicate about themselves and their immediate environment in French at the beginner-novice level by production basic language structures. This communication is evidenced in all four language skills: listening, speaking, reading, and writing. Listening and reading facilitate the ability to communicate orally and in writing.

French II 342000
Virtual Loudoun 34200V
Grade(s): 8-12 Credit: 1
Prerequisite: French I

Students continue to develop proficiency in French at the intermediate-novice level in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

Students learn to function in real-life situations using more complex sentences and language structures. They also read material on familiar topics and produce short writing samples.

French III 343000
Virtual Loudoun 34300V
Grade(s): 9-12 Credit: 1
Prerequisite: French II

Students continue to develop and refine their proficiency in French at an advanced-novice level, integrating all four language skills: listening, speaking, reading, and writing. Emphasis is placed on the ability to interact orally and in writing.

Students communicate using more complex language structures on a variety of topics, moving from concrete to more abstract concepts. At this level, students comprehend authentic materials to which they listen and read and are able to identify significant details when the topics are familiar.

French IV Honors 344000
Grade(s): 10-12 Credit: 1
Prerequisite: French III

Students develop more sophisticated communication skills in French at an intermediate-low level integrating all four language skills: listening, speaking, reading, and writing. Emphasis is placed on the ability to interact orally and in writing. Emphasis is placed on the abilities to interact orally and in writing. Authentic language sources are emphasized at this level.

Students communicate using more complex language structures and express abstract ideas with reasonable fluency. Students are able to create and listen with understanding to reports and presentations. They are also able to describe, summarize and discuss selected AP global themes and topics.

French V Honors 345000
Grade(s): 10-12 Credit: 1
Prerequisite: French IV Honors

Students in French V study AP global themes and topics using more sophisticated communication at an intermediate-mid level in all four language skills: listening, speaking, reading, and writing. Emphasis is placed on the ability to interact, persuade, compare, and contrast orally and in writing.

Students study literary words as well as current and historical events representing the various geographical regions on the world where French is spoken.

French DE 346006
Grade(s): 11-12 Credit: 1
Prerequisite: French IV

Students in French DE study AP global themes and topics using more sophisticated communication at an intermediate-mid level in all four language skills: listening, speaking, reading and writing. Emphasis is placed on the abilities to interact, persuade, compare, and contrast orally and in writing. Students study literary works as well as current and historical events representing the various geographical regions of the world where French is spoken.

AP French Language and Culture 345100
Grade(s): 10-12 Credit: 1
Prerequisite: French V Honors

AP French is holistically designed to offer students a proficiency-based, rigorous college-level experience. This culminating course in French increases student potential in interpretive, interpersonal, and presentational modes in the six global course themes: Global Challenges; Personal and Public Identities; Contemporary Life; Science and Technology; Beauty and Aesthetics; and Families and Communities.

Students build greater fluency in their language skills by developing comprehension and comprehensibility, a rich vocabulary, language control, communication strategies, and cultural awareness. Students are expected to communicate cultural awareness. Students are expected to communicate entirely in French as they compare and contrast French cultures with their personal communities and connect their studies with other disciplines in their high school curricula.

Students have the opportunity to take the AP French exam in May with the possibility of earning college credit.

German I   370000
Virtual Loudoun   37100V
Grade(s): 7-12   Credit: 1
Prerequisite: None
     Students develop the ability to communicate about themselves and their immediate environment in German at the beginner-novice level by producing basic language structures. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

German II   372000
Virtual Loudoun   37200V
Grade(s): 8-12   Credit: 1
Prerequisite: German I
     Students continue to develop proficiency in German at the intermediate-novice level in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.
     Students learn to function in real-life situations using more complex sentences and language structures. They also read material on familiar topics and produce short writing samples.

German III   373000
Grade(s): 9-12   Credit: 1
Prerequisite: German II
     Students continue to develop and refine their proficiency in German at an advanced-novice level, integrating all four language skills: listening; speaking; reading; and writing. Emphasis is placed on the ability to interact orally and in writing.
     Students communicate using more complex language structures on a variety of topics, moving from concrete to more abstract concepts. At this level, students comprehend authentic materials to which they listen and read and are able to identify significant details when the topics are familiar.

German IV Honors   374000
Grade(s): 10-12   Credit: 1
Prerequisite: German III
     Students develop more sophisticated communication skills in German at an intermediate-low level, integrating all four language skills: listening; speaking; reading; and writing. Emphasis is placed on the abilities to interact orally and in writing. Authentic language sources are used at this level.
     Students communicate using more complex language structures and express abstract ideas with reasonable fluency. Students are able to create and listen with understanding to reports and presentations in German. They are also able to describe, summarize, and discuss selected AP global themes and topics.

German V Honors   375000
Grade(s): 10-12   Credit: 1
Prerequisite: German IV Honors
     Students study selected AP global themes and topics using more sophisticated communication at an intermediate-mid level in all four language skills: listening, speaking, reading, and writing. Emphasis is placed on the ability to interact, persuade, compare, and contrast orally and in writing.
     Students study literary words as well as current and historical events representing the various geographical regions on the world where German is spoken.

German DE   376006
Grade(s): 11-12   Credit: 1
Prerequisite: German IV Honors
Students in German DE study selected AP global themes and topics using more sophisticated communication in German at an intermediate-mid-level in all four language skills: listening, speaking, reading, and writing. Emphasis is placed on the abilities to interact, persuade, compare, and contrast both orally and in writing. Students study literary works as well as current and historical events representing the various geographical regions of the world where German is spoken.

AP German Language and Culture   375100
Grade(s): 10-12   Credit: 1
Prerequisite: German V Honors

  AP German is holistically designed to offer students a proficiency-based, rigorous college-level experience. This culminating course in German increases student potential in interpretive, interpersonal, and presentational modes in the six global course themes: Global Challenges; Personal and Public Identities; Contemporary Life; Science and Technology; Beauty and Aesthetics; and Families and Communities.

  Students build greater fluency in their language skills by developing comprehension and comprehensibility, a rich vocabulary, language control, communication strategies, and cultural awareness. Students are expected to communicate cultural awareness. Students are expected to communicate entirely in German as they compare and contrast German cultures with their personal communities and connect their studies with other disciplines in their high school curricula.

  Students have the opportunity to take the AP German exam in May with the possibility of earning college credit.

Latin I   350000
Virtual Loudoun   35100V
Grade(s): 7-12   Credit: 1
Prerequisite: None

  This course explores basic Latin grammar and vocabulary and develops the skills necessary to read elementary Latin texts. The linguistic nature of the course is supplemented by a general overview of Greco-Roman civilization, including history, daily life and mythology. English derivatives are emphasized to show the influence of Latin upon the English language and to contribute to the growth of each student's personal vocabulary.

Latin II   352000
Virtual Loudoun   35200V
Grade(s): 8-12   Credit: 1
Prerequisite: Latin I

  Students review material from Latin I, learn intermediate grammar and vocabulary, and continue to develop skills necessary to read Latin texts. They expand their understanding of Greco-Roman civilization and English derivatives.

Latin III   353000
Grade(s): 9-12   Credit: 1
Prerequisite: Latin II

  Students learn advanced grammatical concepts and vocabulary. They read stories of increasing length and complexity that pertain to the expansion of the Roman Empire. The study of Greco-Roman culture and English derivatives continues.

Latin IV Honors   354000
Grade(s): 10-12   Credit: 1
Prerequisite: Latin III

  This course introduces students to the reading and interpretation of authentic Latin literature. Students learn the basics of Latin poetry including scansion and literary devices. Emphasis is placed upon roman culture, roman history, English derivatives, and Latin grammar relevant to the literary text.

Latin V Honors   355000
Grade(s): 10-12   Credit: 1
Prerequisite: Latin IV Honors

  Latin V pairs a review of Latin grammar and vocabulary with the reading of authentic passages from various Roman authors in preparation for the AP Latin course. It provides students with the skills necessary to translate the authentic text, read aloud Latin verse in meter, analyze stylistic technique, and interpret the author's intent through word choice, syntax, and mythological and historical allusions. An exploration of the pertinent history and mythology is also incorporated into this class.

  Students continue to broaden vocabulary through the study of English derivatives.

Latin V DE   356006
Grade(s): 10-12   Credit: 1
Prerequisite: Latin IV Honors

  Latin V Dual Enrollment pairs a review of Latin grammar and vocabulary with the reading of authentic passages from various Roman authors. It provides students with the skills necessary to translate the authentic text, read aloud Latin verse in meter, analyze stylistic technique, and interpret the author's intent through word choice, syntax, and mythological and historical allusions. An exploration of the pertinent history and mythology is also incorporated into this class.

  Students continue to broaden vocabulary through the study of English derivatives.

AP Latin   359100
Grade(s): 10-12   Credit: 1
Prerequisite: Latin V Honors

This course follows the AP Latin syllabus for Vergil's *Aeneid* and Caesar's *Gallic War*. Students read and translate as literally as possible all required passages and read selected portions of *Aeneid* and *Gallic War* in English. The course examines the historical, social, cultural, and political context of the works and provides frequent practice in reading Latin at sight.

Students are also given frequent opportunities to practice written analysis and critical interpretation, including appropriate references to the use of stylistic and metrical techniques by Vergil and Caesar.

Students have the opportunity to take the AP Latin exam in May with the possibility of earning college credit.

Mandarin Chinese I   321000
Virtual Loudoun   396V00
Grade(s): 9-12   Credit: 1
Prerequisite: None

Students are introduced to the Chinese language and culture in this course. The basic objectives are to help each student attain an acceptable degree of proficiency in the four skills of listening, speaking, reading, and writing, and to present the language within the context of the contemporary Chinese culture. Chinese characters are introduced systematically as they are related to the listening/speaking activities conducted.

Mandarin Chinese II   331000
Virtual Loudoun   397V00
Grade(s): 10-12   Credit: 1
Prerequisite: Mandarin Chinese I

Students continue to build proficiency in the Chinese language and expand their understanding of culture in this course. The basic objectives are to help each student continue to develop an acceptable degree of proficiency in the four skills of listening, speaking, reading, and writing, and to thematically present the language within the context of the contemporary Chinese culture. Chinese characters are reviewed and expanded systematically as they are related to the listening/speaking activities conducted.

Mandarin Chinese III   334000
Grade(s): 11-12   Credit: 1
Prerequisite: Mandarin Chinese II

Students increase proficiency in the basics of Chinese in this course. The objectives of this course are to review and amplify structures previously taught and introduce more advanced vocabulary and structures through the four skills of listening, speaking, reading, and writing, and to present the language within the context of the contemporary Chinese Culture. Chinese characters are reviewed, and more characters introduced systematically as they relate to the listening/speaking activities conducted throughout the course.

The Spanish courses that follow are for students who wish to study Spanish as a second language. Spanish for Fluent Speakers is available for native/heritage Spanish speakers.

Spanish I   360000
Virtual Loudoun   36100V
Grade(s): 7-12   Credit: 1
Prerequisite: None

Students develop the ability to communicate about themselves and their immediate environment in Spanish at the beginner-novice level, producing basic language structures. This communication is evidenced in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing.

Spanish II   362000
Virtual Loudoun   36200V
Grade(s): 8-12   Credit: 1
Prerequisite: Spanish I

Students continue to develop proficiency in Spanish at the intermediate-novice level in all four language skills: listening; speaking; reading; and writing. Listening and reading facilitate the ability to communicate orally and in writing. Students learn to function in real-life situations using more complex sentences and language structures. They also read material on familiar topics and produce short writing samples.

Spanish III   363000
Virtual Loudoun   36300V
Grade(s): 9-12   Credit: 1
Prerequisite: Spanish II

Students continue to develop and refine their proficiency in Spanish at an advanced-novice level, integrating all four language skills: listening; speaking; reading; and writing. Emphasis is placed on the ability to interact orally and in writing.

Students communicate using more complex language structures on a variety of topics, moving from concrete to more abstract concepts. At this level, students comprehend authentic materials to which they listen and read and are able to identify significant details when the topics are familiar.

Spanish IV Honors   364000
Grade(s): 10-12   Credit: 1
Prerequisite: Spanish III

Students develop more sophisticated communication skills in Spanish at an intermediate-low level, integrating all four language skills: listening; speaking; reading; and writing. Emphasis is placed on the abilities to interact orally and in writing. Authentic language sources are used at this level.

Students communicate using more complex language structures and express abstract ideas with reasonable fluency. Students are able to create and listen with understanding to reports and presentations in Spanish. They are also able to describe, summarize, and discuss selected AP global themes and topics.

Spanish V Honors   365000
Grade(s): 10-12   Credit: 1
Prerequisite: Spanish IV Honors or Spanish for Fluent Speakers III Honors

Students in Spanish V study selected AP global themes and topics using more sophisticated communication at an intermediate-mid level in all four language skills: listening, speaking, reading, and writing. Emphasis is placed on the abilities to interact, persuade, compare, and contrast orally and in writing.

Students also study literary works as well as current and historical events representing the various geographical regions of the world where Spanish is spoken.

Spanish DE   363006
Grade(s): 11-12   Credit: 1
Prerequisite: Spanish IV

Students in Spanish DE study selected AP global themes and topics using more sophisticated communication a an intermediate-mid level in all four language skills: listening, speaking, reading and writing. Emphasis is placed on the abilities to interact, persuade, compare, and contract orally and in writing. Students also study literary works as well as current and historical events representing the various geographical regions of the world where Spanish is spoken.

AP Spanish Language and Culture   365100
Grade(s): 10-12   Credit: 1
Prerequisite: Spanish V honors

AP Spanish is holistically designed to offer students a proficiency-based, rigorous college-level experience. This culminating course in Spanish increases student potential in interpretive, interpersonal, and presentational modes in the six global course themes: Global Challenges; Personal and Public Identities; Contemporary Life; Science and Technology; Beauty and Aesthetics; and Families and Communities.

Students build greater fluency in their language skills by developing comprehension and comprehensibility, a rich vocabulary, language control, communication strategies, and cultural awareness. Students are expected to communicate cultural awareness. Students are expected to communicate entirely in Spanish as they compare and contrast Spanish cultures with their personal communities and connect their studies with other disciplines in their high school curricula.

Students have the opportunity to take the AP Spanish exam in May with the possibility of earning college credit.

Spanish Literature and Culture
Advanced Placement   365200
Grade(s): 11-12   Credit: 1
Prerequisite: Spanish V Honors

The AP Spanish Literature and Culture course uses a thematic approach to introduce students to representative texts (short stories, novels, poetry, and essays) from Peninsular Spanish, Latin American, and United States Hispanic literature. Students develop proficiencies across the full range of communication modes (interpersonal, presentational, and interpretive), thereby honing their critical reading and analytical writing skills. Literature is examined within the context of its time and place, as students reflect on the many voices and cultures present in the required readings.

The course also includes a strong focus on cultural connections and comparisons, including exploration of various media (e.g., art, film, articles, literary criticism).

Spanish for Fluent Speakers I 367000
Grade(s): 7-12 Credit: 1
Prerequisite: Placement Test
Spanish for Fluent Speakers I is designed to meet the needs of students whose primary language is Spanish and who have minimal or no formal instruction in the language. While developing their current competencies in formal speaking and listening, students focus on the acquisition of comparable competencies in reading and writing. Upon successful completion of the course, students may continue in the Spanish for Fluent Speakers sequence.

Spanish for Fluent Speakers II 367300
Grade(s): 8-12 Credit: 1
Prerequisite: Spanish for Fluent Speakers I or Placement Test
Spanish for Fluent Speakers II is designed to increase proficiency in reading and writing of students whose primary language is Spanish. Major grammar points are reviewed and finer points of grammar are studied, placing emphasis on style and structural accuracy. Comprehension and communication skills are refined through the reading and discussion of selections written by classic and modern authors in a variety of genres. Upon successful completion of this course, students may continue in the Spanish for Fluent Speakers series.

Spanish for Fluent Speakers III Honors 367500
Grade(s): 9-12 Credit: 1
Prerequisite: Spanish for Fluent Speakers II or Placement Test
Spanish for Fluent Speakers III is designed to further refine fluent speakers' literacy and proficiency skills. Students read from a variety of genres representing numerous Spanish speaking countries. Students discuss current themes and events including world views, global challenges, and students as citizens of a global society.
This course prepares students to enroll in AP Spanish.
Upon successful completion of this course, the student may continue in the traditional Spanish sequence in Spanish V Honors, Spanish V DE, or AP Spanish.

Spanish for Fluent Speakers IV Honors 367504
Grade(s): 10-12 Credit: 1
Prerequisite: Spanish for Fluent Speakers III or Placement Test
Students in Spanish for Fluent Speakers IV study global themes and topics using more sophisticated communication at an advanced level in all four language skills: listening, speaking, reading and writing. Emphasis is placed on the abilities to interact, persuade, compare, and contrast orally and in writing. Students also study literary works as well as current and historical events representing the various geographical regions of the world where Spanish is spoken.
This course prepares students to enroll in AP Spanish.
Upon successful completion of this course, the student may continue in the traditional Spanish sequence in Spanish V Honors, Spanish V DE, or AP Spanish.

Other Courses Offered

Advanced Placement Seminar 099900
Grade(s): 10-12 Credit: 1
Prerequisite: None

This foundational course provides students with opportunities to think critically and creatively, research, explore, pose solutions, develop arguments, collaborate, and communicate using various media. Students explore real-world issues through a variety of lenses and consider multiple points of view to develop deep understanding of complex issues as they make connections between these issues and their own lives.

This elective course is available to students in grades 10-12 and could be taught in a variety of disciplines. This course is the prerequisite to AP Research..

Advanced Placement Research 099901
Grade(s): 11-12 Credit: 1
Prerequisite: AP Seminar

Students design, plan, and conduct a yearlong research-based investigation on a topic of individual interest. Through this inquiry and investigation, students demonstrate the ability to apply scholarly understanding to real-world problems and issues.

AVID 1 092000
Grade(s): 9 Credit: 1
Prerequisite: None
Available at DHS, PVHS, and THS only

This course prepares students for entrance into colleges and universities. The course emphasizes critical reading strategies, analytical writing, collaborative discussion strategies, tutorial inquiry study groups, preparation for college entrance and placement exams, college study skills and test taking strategies, note taking and research. Students also develop time management and organization skills as part of the AVID 1 course.

AVID 2 093000
Grade(s): 10 Credit: 1
Prerequisite: AVID 1 recommended
Available at DHS, PVHS, and THS only

This course prepares students for entrance into colleges and universities. The course emphasizes critical reading strategies, analytical writing, collaborative discussion strategies, tutorial inquiry study groups, preparation for college entrance and placement exams, college study skills and test taking strategies, note taking and research. Students also investigate college and career options as part of the AVID 2 course.

AVID 3 094000
Grade(s): 11 Credit: 1
Prerequisite: AVID 2
Available at DHS, PVHS, and THS only

This course prepares students for entrance into colleges and universities. The course emphasizes critical reading strategies, analytical writing, collaborative discussion strategies, tutorial inquiry study groups, preparation for college entrance and placement exams, college study skills and test taking strategies, note taking and research. Students also investigate the college application process and develop a portfolio of sample college applications and sample essays.

AVID 4 095000
Grade(s): 12 Credit: 1
Prerequisite: AVID 3
Available at DHS, PVHS, and THS only

This course prepares students for entrance into colleges and universities. The course emphasizes critical reading strategies, analytical writing, collaborative discussion strategies, tutorial inquiry study groups, preparation for college entrance and placement exams, college study skills and test taking strategies, note taking and research. Students also finalize college application requirements, with a particular emphasis on investigating options for financial aid. In addition, students conduct and present a culminating research project.

Basic Skills	080040
Grade(s): 9-12	Credit: 1
Basic Skills	080045
Grade(s): 9-12	Credit: 0.5 per semester; may be taken two semesters per year

Prerequisite: None

Graded as a Pass or Fail, not used in Cumulative Grade Point Average

Basic Skills is an elective course for special education students receiving resource or self-contained services for a full period and who require more intensive work on identified needs as noted in the Individualized Education Plan (IEP).

Students are introduced to a variety of strategies and techniques to enable them to better achieve in school. Strategies and techniques may include time management, study skills, note taking, and self-advocacy, based on the student's needs. The teacher may use one or more content areas (e.g., language arts, mathematics, science) to teach students how to adapt these strategies and techniques to different situations.

Because this is a developmental course, Basic Skills may be retaken for credit each semester for up to four years.

Career Pathways	080570
Grade(s): 10-12	Credit: 1

Prerequisite: None

Career Pathways is an elective course for students with Individualized Educational Plans (IEP). The course focuses on goal setting and self-determination as they relate to transitioning from secondary to post-secondary success through use of the Life Centered Career Education Curriculum. Students may participate in school-based or community work experiences as a part of this course.

The course is taught based upon individual student needs and interests; therefore, it may be taken more than once for consecutive, elective credit.

SAT Preparation	071000
Grade(s): 10-12	Credit: 0.5

Prerequisite: None

This course is designed to help students spend concentrated time and effort understanding the patterns and strategies needed to understand and prepare for the SAT Reasoning Test, a nationally standardized college admissions test.

Instruction focuses on the test design, practice, analysis of results, and instruction in areas of weakness. Three main areas of study include critical reading, mathematical reasoning, and writing.

The course is graded as a "pass/fail" elective, based on the student's active participation in the class and completion of assignments.

Priority is given to seniors for the first semester and to juniors during second semester. Interested sophomores may have access if space permits.

Academies of Loudoun

The mission of the Academies of Loudoun is to empower students to **explore, research, collaborate, innovate**, and to make meaningful contributions to the world in the fields of **science, technology, engineering and mathematics**.

Academy of Engineering & Technology

The Academy of Engineering & Technology (AET) program strives to provide academic STEM (Science, Technology, Engineering and Mathematics) pathways for students to engage in the study of engineering, information technology, and entrepreneurship. Students in the AET program will develop their creative and enterprising capacities, engage in engineering and research projects, and have the opportunity to pursue a well-rounded high school experience. A student at AET acquires the skills to ask sophisticated scientific questions and conduct research and experimentation; to explore the connections between STEM and the real world through innovation challenges; to read, write, and communicate at a level that is required of university students; and to develop perspectives to assess the impact of scientific advancements on society.

Academy of Science

The Academy of Science (AOS) program strives to provide students the opportunity to deeply engage in mathematics, science, and research and to promote creativity and innovation through problem solving and collaboration. Students in the AOS program acquire the skills to ask sophisticated scientific questions and conduct research and experimentation; to explore the interconnections between the sciences, math, and the humanities; to read, write, and communicate at a level that is required of university students; and to develop perspectives to assess the impact of scientific advancements on society.

Monroe Advanced Technical Academy

The Monroe Advanced Technical Academy (MATA) program strives to provide significant and relevant learning in Career & Technical Education (CTE), which allows students to explore and innovate while preparing for 21st century college and careers.

<u>MATA 1-year pathways</u>

Administration of Justice
Auto Collision Repair Technology
Biotechnology
Building Construction
CISCO
Culinary Arts
Cybersecurity
Emergency Medical Technician
Environmental Plant Science
Firefighter
Introduction to Health & Medical Sciences (10th grade only)
Health Informatics
Heating, Ventilation, and Air Conditioning
Masonry
Television Production and Moviemaking
Veterinary Science

<u>MATA 2-year pathways</u>

Auto Service Technology
Biomedical Technology
Computer Integrated Engineering and Design
Computer and Digital Animation
Cosmetology
Graphic Communications
Medical Laboratory Technology
Practical Nursing
Pharmacy Technology
Radiology Technology
Welding

AET Mathematics Courses

AET Integrated Mathematics I   566100
Grade(s): 9   Credit: 1
Prerequisite: None

     This course is the first in a series of integrated math courses (two-year sequence of courses) designed for AET students. Students study Algebra II with Trigonometry and Math Analysis as an integrated progression of math topics and learn content typically taught in these courses. The course is inquiry-based with much of the content learned through investigation and problem-based exercises.

AET Integrated Mathematics II   566200
Grade(s): 10   Credit: 1
Prerequisite: AET Integrated Math I

`SOL Test` This course is the second in a series of integrated math courses (two-year sequence of courses) designed for AET students. Students study Algebra II with Trigonometry and Math Analysis as an integrated progression of math topics and learn content typically taught in these courses. The course is inquiry-based with much of the content learned through investigation and problem-based exercises. This course prepares students to take an Advanced Placement Calculus course the following year.

AET AP Calculus AB   566300
Grade(s): 11-12   Credit: 1
Prerequisite: AET Integrated Math II or Math Analysis

     AET AP Calculus AB explores 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 is expected to relate the connections among these approaches. Students are also required to synthesize knowledge of the topics of the course to solve applications that model physical, social, and/or economic situations. These applications emphasize derivatives as rates of change, local linear approximations, optimizations and curve analysis, and integrals as Reimann sums, area of regions, volume of solids with known cross sections, average value of functions, and rectilinear motions. Emerging technologies are incorporated into the curriculum as they become available. Students have the opportunity to take the AP Calculus AB Exam in May with the possibility of earning college credit.

AET AP Calculus BC   566400
Grade(s): 11-12   Credit: 1
Prerequisite: AET Integrated Math II or Math Analysis

     AET AP Calculus BC is intended for students who have a thorough knowledge of analytic geometry and elementary functions in addition to college-preparatory algebra, geometry, and trigonometry. Although all of the elements of the AP Calculus AB course are included, the course provides a more rigorous treatment of these introductory calculus topics. The course also includes the development of the additional topics required by the College Entrance Examination Board in its syllabus for AP Calculus BC. Among these are parametric, polar, and vector functions; the rigorous definition of limit; advanced integration techniques; Simpson's Rule; length of curves; improper integrals; Hooke's Law; and the study of sequences and series. The use of the graphing calculator is fully integrated into instruction and students are expected to confirm and interpret results of problem situations that are solved using available technology. Emerging technologies are incorporated into the curriculum as they become available. Students have the opportunity to take the AP Calculus BC Exam in May with the possibility of earning college credit.

AET AP Statistics   598200
Grade(s): 12   Credit: 1
Prerequisite: AET AP Calculus AB

     The AP Statistics course explores the concepts and skills according to the syllabus available through the College Entrance Examination Board. These topics include collecting and interpreting data through numerical methods, binomial and normal distribution, probability, linear correlation and regression, analysis of variance, and other descriptive statistical methods. Students should be able to transform data to aid in data interpretation and prediction and test hypotheses using appropriate statistics. Emerging technologies are incorporated into the curriculum as they become available. Students have the opportunity to take the AP Statistics exam in May with the possibility of earning college credit.

AET Multivariable Calculus   583200
Grade(s): 12   Credit: 1
Prerequisite: None

This is a course in vector calculus. There is a special emphasis on using vector fields to model motion of particles and fluids in two and three dimensions. The software tool *Mathematica* is used throughout the course to create interactive graphics to enhance the meaning of calculations. In this context students discover methods for computing or approximating double and triple integrals. The work includes the use of the theorems of Gauss, Green, and Stokes to measure flow and turbulence.

AET Science Courses

AET Integrated Science I   667100
Grade(s): 9   Credit: 1
Prerequisite: None

This course is the first in a series of integrated science courses (two-year sequence of courses) designed for AET students. Students study the physical sciences, physics and chemistry, as an integrated progression of science topics and learn content typically taught in these courses. The course is inquiry-based with much of the content learned through laboratory exercises. Students take the Chemistry SOL test during the AET Integrated Science course progression. AET Integrated Science I and II prepare students for the advanced study of physical sciences in the junior and senior years. This course is required for all AET Engineering and Entrepreneurship freshman.

AET Integrated Science II   667200
Grade(s): 10   Credit: 1
Prerequisite: AET Integrated Science I
`SOL Test` This course is the second and final in the series of integrated science courses (two-year sequence of courses) designed for AET students. Students study the physical sciences, physics and chemistry, as an integrated progression of science topics and learn content typically taught in these courses. The course is inquiry-based with much of the content learned through laboratory exercises. Students take the Chemistry SOL test during the AET Integrated Science course progression. AET Integrated Science I and II prepare students for the advanced study of physical sciences in the junior and senior years. This course is required for all AET Engineering and Entrepreneurship sophomores.

AET Physics   671300
Grade(s): 9   Credit: 1
Prerequisite: None

The AET Physics course is the science course required for all AET IT pathway students. AET physics is a rigorous academic course preparing students for college level work. The course is inquiry-based with much of the content learned through laboratory exercises. Algebra skills are used to develop concepts and solve problems.

AET Research Chemistry   661500
Grade(s): 10   Credit: 1
Prerequisite: None

The AET Research Chemistry course is one of the science courses required for all AET IT pathway students. AET Research Chemistry is a rigorous academic course preparing students for college level work. Students have multiple experiences conducting science research as a means to develop chemistry content knowledge and scientific thinking. Students interpret chemical information and utilize technology, and chemistry protocols to organize and analyze data. Students learn the role that scientific evidence and scientific thinking plays in development of new scientific knowledge in the field of chemistry. Students are expected to collect and communicate data with descriptive statistics and graphical representations. In addition, students answer research questions using scientific data and draw conclusions using their chemical content knowledge. During Research Chemistry, students develop the science thinking and process skills required to generate a scientific research question and design an investigation to collect data that will answer their question. Additionally, students develop a deeper understanding of the role of inferential statistics in data analysis and drawing conclusions.

AET AP Advanced Computer Science   668000
Grade(s): 10   Credit: 1
Prerequisite: AET Information Technology & Computer Science
This course is the second in the series of computer science courses (two-year sequence of courses) designed for AET IT pathway students. This is a college-level, fast-paced course that completes the course outline of the College board's AP Computer Science program. The course emphasizes many extended lab procedures and has elements of research and design. Course content includes sorting algorithms (selection, insertion, merge, quick and heap) and data structures (arrays, recursion, linked lists, stacks, queues, trees, sets, maps and graphs). The programming language is JAVA. Students have the opportunity to take the AP Computer Science Exam in May with the possibility of earning college credit.

AET AP Physics   671400
Grade(s): 11   Credit: 1
Prerequisite: AET Integrated Science II
This course is a college-level, fast-paced course that follows the course outline of the College Board's AP Physics program. Emphasis is placed on mechanics. Students stud concepts in each of the following six content areas: kinematics, Newton's laws of motion; work, energy, and power; systems of particles and linear momentum; circular motion and rotation; and oscillations and gravitation. Pre-calculus and Calculus skills are used to develop concepts and solve problems.
Students have the opportunity to take the AP Physics Exam in May with the possibility of earning college credit.

AET Engineering Studies III, Junior Research   855103
Grade(s): 11   Credit: 1
Prerequisite: AET Engineering Studies II
This 11th grade engineering course continues to build on the knowledge and skills obtained in AET Engineering I and II. Students explore engineering through a series of problem based labs that focus on the following engineering disciplines: Aerospace, Civil, Electrical & Mechanical. Throughout the year, students will have the opportunity to complete labs as individuals and in collaborative in teams. High priority will be given to microcontroller programming, prototyping, industrial design, and robotics. In addition, students will learn the critical steps needed to plan and implement a thorough research project.

AET Computer Science Investigations,
Junior Research   668100
Grade(s): 11   Credit: 1
Prerequisite: AET AP Advanced Computer Science
The 11th grade Information Technology elective continues to build on the coding skills and knowledge obtained in AET Information Technology & Computer Science and AET AP Advanced Computer Science. With a strong computer science background, students will explore the quickly growing fields of Artificial Intelligence, Machine Learning, and Mobile/Web Application Development. Throughout the year, students will have the opportunity to complete multiple labs and problem sets as individuals and in collaborative teams. In addition, students will learn the critical steps needed to plan and implement a thorough research project.

AET AP Biology   655200
Grade(s): 12   Credit: 1
Prerequisite: Biology or Research Biology
This advanced course is a college-level, fast-paced course that follows the course outline of the College Board's AP Biology program. The course emphasizes cellular biology, biochemical processes of cellular respiration and photosynthesis, vertebrate anatomy and physiology, advanced genetics, evolution, plant anatomy and physiology, and ecology.
Students have the opportunity to take the AP Biology Exam in May with the possibility of earning college credit.

AET AP Environmental Science   674300
Grade(s): 12   Credit: 1
Prerequisite: None
This advanced course is a college-level, fast-paced course in Environmental Science that follows the course outline of the College Board's AP Environmental Science program. The course includes field work and many extended lab procedures. The course emphasizes population biology; ecosystems; geologic and earth science concepts; atmospheric science; land and water use topics including energy and energy use, consumption, and conservation, and pollution; and global change.
Students have the opportunity to take the AP Environmental Science Exam in May with the possibility of earning college credit.

AET AP Chemistry	665200
Grade(s): 12	Credit: 1
Prerequisite: None

This advanced course is a college-level, fast-paced course in Chemistry that follows the course outline of the College Board's AP Chemistry program. The course includes many extended lab procedures. In addition, such fields as organic chemistry, biochemistry, nuclear chemistry, coordination complexes, and semi-micro qualitative analysis are introduced.

Students have the opportunity to take the AP Chemistry Exam in May with the possibility of earning college credit.

AET Senior Research – Computer Systems	668200
Grade(s): 12	Credit: 1
Prerequisite: AET Junior Research

In this course students continue to conduct interdisciplinary science research activities using inquiry-based methodology and increase their skill level with research and development techniques and protocols. This course also enhances the ability of students to read and write scientific papers at the publication level. Students in senior research continue their work on the plan created during the junior research course. They conduct their research and development with the guidance of a faculty mentor. Regular presentation of results is an expectation for all research students.

AET Senior Research – Engineering	668300
Grade(s): 12	Credit: 1
Prerequisite: AET Junior Research

In this course students continue to conduct interdisciplinary science research activities using inquiry-based methodology and increase their skill level with the engineering design process, research and development techniques and protocols. This course also enhances the ability of students to read and write scientific papers at the publication level. Students in senior research continue their work on the plan created during the junior research course. They conduct their research and development with the guidance of a faculty mentor. Regular presentation of results is an expectation for all research students.

AET Specialty Courses

AET Information Technology & Computer Science	829300
Grade(s): 9	Credit: 1
Prerequisite: None

This course is the first of the computer science courses specifically designed for AET IT pathway students who wish to engage in an intensive study of computer science and information technologies. It is designed for students with no programming experience. The course will cover object-oriented programming, graphics and animation, GUI interfaces, arrays and files, sorting, recursion and ethics. The programming language is JAVA. All AET IT students will be required to design, develop and conduct multiple programming and research projects while attending the AET.

AET Engineering Studies I	855101
Grade(s): 9	Credit: 1
Prerequisite: None

This course is the first in a series of engineering studies courses specifically designed for AET Engineering students. The course is designed for students who wish to engage in an intensive study of engineering, including the engineering design process. The course is inquiry-based with much of the content learned through investigation and problem-based exercises. Students will practice engineering fundamentals, using mathematical and scientific concepts, and they will apply the engineering design process through participation in hands-on engineering projects. Students communicate project-related information through team-based presentations, proposals, and technical reports. All AET Engineering I students will be required to complete multiple engineering projects while attending the AET.

AET Engineering Studies II	855102
Grade(s): 10	Credit: 1
Prerequisite: AET Engineering Studies I

This course is the second in a series of Engineering studies courses specifically designed for AET Engineering students. Engineering Studies prepares students by emphasizing integration of mathematics, science, and English concepts and skills into engineering problems in a curriculum demanding rigorous study habits and other college-level skills. Students are encouraged to become routinely inquisitive through brainstorming and prototyping. Students practice engineering skills and communication of technical information while applying the engineering design process to complete multiple engineering projects while attending the AET.

AET Entrepreneurship I DE   824306
Grade(s): 9   Credit: 1
Prerequisite: None
      This course is the first in a series of Entrepreneurship studies courses specifically designed for AET Entrepreneurship students. Students will learn to think entrepreneurially and to recognize opportunities in the marketplace that will enrich the lives of their community and the world. Students will learn core curriculum in business ownership, economics, finance, customer service and sales, and marketing in order to turn their STEM related entrepreneurial ideas into action. Designed for students who are interested in STEM fields and wish to engage in an intensive study of developing, marketing and managing STEM related businesses. All AET Entrepreneurship students will be required to develop multiple, STEM focused business and marketing plans.

AET Entrepreneurship II DE   824406
Grade(s): 10   Credit: 1
Prerequisite: AET Entrepreneurship I DE
      This course is the second in a series of Entrepreneurship studies courses specifically designed for AET Entrepreneurship students. Students will concentrate on advanced strategies for entrepreneurship with an emphasis on opportunities in the STEM industries. It will build on concepts introduced in AET Entrepreneurship I and focus on the development of a business plan and small business management. Designed for students who are interested in STEM fields and wish to engage in an intensive study of developing, marketing and managing STEM related businesses. All AET Entrepreneurship students will be required to develop multiple, STEM focused business and marketing plans.

AOS Mathematics Courses

AOS Mathematical Analysis and Computational Modeling I   563001
Grade(s): 9   Credit: 1
Prerequisite: None
`SOL Test` This course provides the foundation for investigation of mathematical systems and their interrelationships from a transformational approach. Elementary and transcendental functions, parametric equations, polar coordinates, matrices, and linear algebra are studied in context-rich, data-driven application problems. A scientific, inquiry-based methodology is utilized to clearly connect mathematical concepts to topics in the integrated physical sciences course. An introduction to statistics through normal distributions and elementary probability theory with an emphasis on applications to scientific research provides a foundation for further study in the second course. Mathematical and computational modeling using various technologies is a major feature of the course. The course places heavy emphasis on mathematical communication, reasoning, authentic problem solving, critical thinking, and multiple representations of mathematical concepts.

AOS Mathematical Analysis and Computational Modeling with Statistics   563002
Grade(s): 10   Credit: 1
Prerequisite: AOS Math Analysis and Computational Modeling I
      This course provides a continuation and expansion of the study of elementary, transcendental, and logistic functions, as well as parametric, polar, matrix, and linear algebra systems. Infinite sequences and series, limits, continuity, and rates of change as an introduction to the derivative are major topics introduced in this second course. Emphasis on mathematical modeling to study rates of change introduces the concept of a derivative. Differential calculus concepts are thoroughly explored, and integration is introduced to prepare students for the AP Calculus BC course the following year. The inquiry-based methodology and transformation approach utilized in the previous course are continued as unifying themes in this second course. Inferential statistics topics, including both parametric and non-parametric tests, are major components of the course and are introduced in project-based activities that complement the integrated science course and provide a foundation for independent science research in the 11th and 12th grade. Mathematical and computational modeling using various technologies is an integral part of the course. Heavy emphasis is place on mathematical communication, reasoning, authentic problem solving, critical thinking, and multiple representations of mathematical concepts.

AOS AP Calculus AB   561100
Grade(s): 11-12   Credit: 1
Prerequisite: None
　　　　This course covers all the topics in the College Board's description of an AB level AP Calculus course. In addition, the students experience use of one or more differential equations to create models for a variety of dynamic processes of the types studied in the physical and biological sciences. After the AP exam in May, the students are introduced to classical methods of statistical inference.
　　　　Students have the opportunity to take the AP AB Calculus Exam in May with the possibility of earning college credit.

AOS AP Calculus BC   571100
Grade(s): 11-12   Credit: 1
Prerequisite: None
　　　　This course covers all of the topics in the College Board's description of a BC level AP Calculus course. In addition, the students experience use of one or more differential equations to create models for a variety of dynamic processes of the types studied in the physical and biological sciences. After the AP exam in May, the students are introduced to classical methods of statistical inference. Students have the opportunity to take the AP BC Calculus Exam in May with the possibility of earning college credit.

AOS Multivariable Calculus DE   583007
Grade(s): 12   Credit: 1
　　　　This is a course in vector calculus. There is a special emphasis on using vector fields to model motion of particles and fluids in two and three dimensions. The software tool *Mathematica* is used throughout the course to create interactive graphics to enhance the meaning of calculations. In this context students discover methods for computing or approximating double and triple integrals. The work includes the use of the theorems of Gauss, Green, and Stokes to measure flow and turbulence.

AOS Multivariable Calculus with Topics from Differential Equations   584100
Grade(s): 12   Credit: 1
Prerequisite: None
　　　　This course includes all the topics in the AOS Multivariable Mathematics. In addition, the students write differential equations for a variety of oscillating motions including those with damping and exterior forcing. As they explore techniques for getting exact or appropriate solutions of these equations they will work with several techniques included in a first college level course in differential equations.

AOS Science Courses

AOS Integrated Science I   664900
Grade(s): 9   Credit: 1
Prerequisite: None
`SOL Test` This course is the first in a series of integrated science courses (two-year sequence of courses) designed for AOS students. Students study the physical sciences, physics, chemistry, and earth science as an integrated progression of science topics and learn content typically taught in these courses. The course is inquiry-based with much of the content learned through laboratory exercises, many of which are student-designed. Students take the Earth Science and Chemistry SOL tests during the AOS Integrated Science course progression. AOS Integrated Science I, II, and III prepare students for the advanced study of physical sciences in the junior and senior years. This course is required for all AOS 9th graders.

AOS Integrated Science II   645900
Grade: 9   Credit: 1
Corequisite: AOS Integrated Science I
`SOL Test` This course is the second in a series of integrated science courses (two-year sequence of courses) designed for AOS students. Students study the physical sciences, physics, chemistry, and earth science as an integrated progression of science topics and learn content typically taught in these courses. The course is inquiry-based with much of the content learned through laboratory exercises, many of which are student-designed. Students take the Earth Science and Chemistry SOL tests during the AOS Integrated Science course progression. AOS Integrated Science I, II, and III prepare students for the advanced study of physical sciences in the junior and senior years. This course is required for all AOS 9th graders.

AOS Integrated Science III   654900
Grade(s): 10   Credit: 1
Prerequisite AOS Integrated Science I and II
  This course is the third in a series of integrated science courses (two-year sequence of courses) designed for AOS students. Students study the physical sciences, physics, chemistry, and earth science as an integrated progression of science topics and learn content typically taught in these courses. The course is inquiry-based with much of the content learned through laboratory exercises, many of which are student-designed. Students take the Earth Science and Chemistry SOL tests during the AOS Integrated Science course progression. AOS Integrated Science I, II, and III prepare students for the advanced study of physical sciences in the junior and senior years. This course is required for all AOS 10th graders.

AOS Biology   652900
Grade: 11   Credit: 1
Prerequisite: None
  The AOS Biology course is the next progression for students who have spent two years in an integrated, inquiry-based science course sequence. AOS Biology is a rigorous course preparing students for college level work. The approach of this course is a project/problem-based program where a scientific dilemma is posed to students; the students identify what they need to know in order to answer the question; the teacher leads them through the content they need in order to answer the question; and lab activities are relevant to the topic covered. Biology is a required class for AOS students in Grade 11.

AOS Sophomore Science Research   651900
Grade(s): 10   Credit: 1
Prerequisite: AOS Integrated Science I and II
  In this course students conduct a series of interdisciplinary science research activities designed to involve students in the application and use of inquiry-based methodology and to learn the use of techniques, equipment, and protocols typically used in scientific research laboratories. This course also enhances the ability of students to read and write scientific papers at the publication level. During the second semester, students begin work on a science research project of their own design that can be continued throughout their years as an AOS student. Sophomore Science Research is offered in conjunction with AOS Integrated Science III. This course is required for all AOS sophomores.

AOS Junior Science Research   661900
Grade(s): 11   Credit: 1
Prerequisite: AOS Sophomore Science Research
  Students continue to conduct interdisciplinary science research activities using inquiry-based methodology and increase their skill level with laboratory techniques and protocols in this course. This course also enhances the ability of students to read and write scientific papers at the publication level. Based on their interests, students begin to develop a research plan for an independent science research project that they complete in the Senior Science Research course. With a faculty mentor, they conduct a literature search, develop laboratory protocols, develop a materials list, create a budget, and work as a bench scientist. Regular presentation of results is an expectation for all research students. While it is intended that most of the bench-work can be conducted at AOS, some students interact with local scientists who act as mentors during both the school year and summer.

AOS Senior Science Research   671900
Grade(s): 12   Credit: 1
Prerequisite: AOS Junior Science Research
In this course students continue to conduct interdisciplinary science research activities using inquiry-based methodology and increase their skill level with laboratory techniques and protocols. This course also enhances the ability of students to read and write scientific papers at the publication level. Students in senior research continue their work on the plan created during the junior research course. They conduct their bench-work with the guidance of a faculty mentor. Regular presentation of results is an expectation for all research students. While it is intended that most of the bench-work can be carried out at AOS, some students interact with local scientists who act as mentors during both the school year and summer.

AOS AP Biology   664100
Grade(s): 12   Credit: 1
Prerequisite: None
  This advanced course is a college-level, fast-paced course that follows the course outline of the College Board's AP Biology program. The course emphasizes cellular biology, biochemical processes of cellular respiration and photosynthesis, vertebrate anatomy and physiology, advanced genetics, evolution, plant anatomy and physiology, and ecology.
  Students have the opportunity to take the AP Biology Exam in May with the possibility of earning college credit.

AOS AP Environmental Science   674100
Grade(s): 12   Credit: 1
Prerequisite: None
      This advanced course is a college-level, fast-paced course in Environmental Science that follows the course outline of the College Board's AP Environmental Science program. The course includes field work and many extended lab procedures. The course emphasizes population biology; ecosystems; geologic and earth science concepts; atmospheric science; land and water use topics including energy and energy use, consumption, and conservation, and pollution; and global change.
      Students have the opportunity to take the AP Environmental Science Exam in May with the possibility of earning college credit.

AOS AP Chemistry   669100
Grade(s): 12   Credit: 1
Prerequisite: None
      This advanced course is a college-level, fast-paced course in Chemistry that follows the course outline of the College Board's AP Chemistry program. The course includes many extended lab procedures. In addition, such fields as organic chemistry, biochemistry, nuclear chemistry, coordination complexes, and semi-micro qualitative analysis are introduced.
      Students have the opportunity to take the AP Chemistry Exam in May with the possibility of earning college credit.

AOS AP Physics   662100
Grade(s): 12   Credit: 1
Prerequisite: None
      This course is a college-level, fast-paced course in that follows the course outline of the College Board's AP Physics program. Emphasis is placed on mechanics, and the student has the option to study additional topics. Pre-calculus and calculus skills are used to develop concepts and solve problems.
      Students have the opportunity to take the AP Physics Exam in May with the possibility of earning college credit.

MATA Specialty Courses

MATA Administration of Justice I SEM   887308
Grade(s): 11-12   Credit: 1.5
Prerequisite: None
      This course is the first semester course in the MATA Administration of Justice sequence. This course prepares students for entry-level employment in the law enforcement and criminal justice field as well as entrance into institutions of higher learning in the related fields of criminal justice, political science, and law. Topics include, but are not limited to criminal justice professions, ethics, communication skills, report writing, interpreting criminal and civil laws, use of force, emergency response, traffic control, vehicle stops, crime prevention, patrol functions, community policing, criminal investigation, search and seizure, arrest and court procedures, corrections, the juvenile justice system, crime scene investigation, and crime prevention.
      Lab Fee: This course does not have a lab fee.

MATA Administration of Justice II SEM   887408
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Admin of Justice I DE
      This course is the second semester course in the MATA Administration of Justice sequence. This course prepares students for entry-level employment in the law enforcement and criminal justice system as well as entrance into institutions of higher learning in the related fields of criminal justice, political science, and law. The course explores career opportunities in the criminal justice community, understanding the constitution, substantive law, procedural law, and due process of law, and its impact on interviews and interrogations, developing probable cause, preparing search and arrest warrants, organized crime and criminal activities associated with those type of investigations, federal taskforces; complex criminal investigation, investigative techniques, the use of informants, wire intercepts, international terrorism and counterterrorism strategies, as well as advanced crime scene investigation.
      Lab Fee: This course does not have a lab fee.

MATA Auto Collision Repair Technology I   867701
Grade(s): 11-12   Credit: 1.5
Prerequisite: None
This course is the first semester course in the MATA Auto Collision Repair Technology sequence. This course provides basic knowledge and skills in the use of shop materials, equipment, tools, procedures, and manuals in the auto body and auto refinishing fields. Basic welding, aligning, roughing out, and replacing and refinishing (painting) of auto body sheet metal, plastics, urethane, and composites are among the skills taught in this course. Fundamentals of auto body repair estimating are also taught. Students gain experience through theory and hands-on shop projects.
        Lab Fee: $40.00

MATA Auto Collision Repair Technology II   867702
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Auto Collision Repair Technology I
This course is the second semester course in the MATA Auto Collision Repair Technology sequence. Students have the opportunity to develop their knowledge and skills through applied theory and hands-on shop projects using knowledge learned in Collision Repair Technology I. Instructional topics include engine cooling systems, automotive circuits and wires, underbody measurement, and structural alignment. Students explore career options such as auto collision repair technician, automotive refinishing technician, automotive parts specialist, detail technician, estimator, and insurance adjuster. Upon successful completion of this course, students are prepared to perform many aspects of collision repair and qualify for sponsored apprenticeship programs.
        Lab Fee: This course does not have a lab fee.

MATA Auto Servicing Technology I   862401
Grade(s): 11   Credit: 1.5
Prerequisite: None
This course is the first semester course in the MATA Auto Servicing Technology sequence. This program provides the opportunity for students to develop the skills needed to follow environmental and safety practices and inspect, diagnose, adjust, and repair the systems of the modern technological automobile. An industry standard curriculum, master-certified, credentialed by the Automotive Service Excellence (ASE) and National Automotive Technician Educational Foundation (NATEF), provides the student the training format to proceed from the basic to advanced level technician in in brakes, steering and suspension, engine repair, and heating ventilation & air conditioning (HVAC). Students may obtain ASE certification. Internship programs are available to students meeting certain criteria. Students can work with selected mentors at local dealerships or other auto servicing businesses. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
        Lab Fee: $30.00

MATA Auto Servicing Technology II   862402
Grade(s): 11   Credit: 1.5
Prerequisite: MATA Auto Servicing Technology I
This course is the second semester course in the MATA Auto Servicing Technology sequence, and covers environmental and safety practices and inspections, diagnosing, adjusting, and repairing the systems of the modern technological automobile. An industry standard curriculum, master-certified by ASE (Automotive Service Excellence) and NATEF (National Automotive Technician Educational Foundation), provides the student the training format to proceed from the basic- to advanced-level technician in Electricity, Manual Drive train and Axle, Engine Performance, and Automatic Transmission. Students may obtain ASE certification in these areas. Internship programs are available to students meeting certain criteria. Students can work with selected mentors at local dealerships or other auto servicing businesses. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
        Lab Fee: This course does not have a lab fee.

MATA Auto Servicing Technology III   862600
Grade(s): 12   Credit: 3
Prerequisite: MATA Auto Servicing Technology II
This course is the third course in the MATA Auto Servicing Technology sequence and covers the full second year of instruction. An industry standard curriculum, master-certified by ASE (Automotive Service Excellence) and NATEF (National Automotive Technician Educational Foundation), provides the student the training format to proceed from the basic- to advanced-level technician in Electricity, Manual Drive train and Axle, Engine Performance, and Automatic Transmission. Students may obtain ASE certification in these areas. Internship programs are available to students meeting certain criteria. Students can work with selected mentors at local dealerships or other auto servicing businesses. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
        Lab Fee: $30.00

MATA Biomedical Technology I   885301
Grade(s): 11   Credit: 3
Prerequisite: None

This MATA 2-year pathway focuses on various Biomedical techniques ranging from Bioprocessing and DNA analysis, to medicine, biomechanical systems, and the environment. Students completing the 2-year sequence gain foundational knowledge and skills appropriate for a variety of medical-related career paths in the field of biotechnology. They are introduced to laboratory procedures that support bioscience research and practice, and they investigate safety, quality assurance, and the ethical concerns associated with the field of biomedical technology.

Lab Fee:$68.50

MATA Biomedical Technology II   885302
Grade(s): 12   Credit: 3
Prerequisite: MATA Biomedical Technology I

This second-year course in the 2-year pathway focuses on human body systems and examines their interactions. Exploration of science in action takes place while students are building organs and testing their movements with data acquisition software. A fictitious family is monitored and students investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection and screen and evaluate the code in human DNA. Students take on the roles of biomedical professionals to solve real-world medical cases. Students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics. Using knowledge gained throughout the two-year program, students will develop a research project to design innovative solutions for pressing health challenges, from public health and biomedical engineering to clinical medicine and physiology.

Lab Fee: This course does not have a lab fee.

MATA Biotechnology   885200
Grade(s): 11-12   Credit: 3
Prerequisite: None

This one-year course introduces students to the world of biotechnology which includes the study of living organisms or their products to modify human health and the human environment. Students explore many topics related to research, bioethics, forensics, health and medical fields, agriculture, environmental management, and many more. Through lab experiences, students use a variety of laboratory equipment and become involved in research through scientific inquiry and on-line mentorships. This course is part of the Loudoun Governor's Career and Technical STEM Academy program.

Lab Fee: $30.00

MATA Building Construction I   865701
Grade(s): 11-12   Credit: 1.5
Prerequisite: None

This course is the first semester course in the MATA Building Construction sequence. Students acquire basic understanding of residential construction and the carpentry trade. The program also provides instruction on plan reading and comprehension. Units of instruction include the completion of an Occupational Safety and Health Administration (OSHA) certification program and the study of structural components with emphasis on how they relate to each other, code, and to the finished product. This includes foundation work, floor and wall framing, interior and exterior finishes, and the construction and installation of cabinetry.

Lab Fee: $30.00

MATA Building Construction II   865702
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Building Construction I

This course is the second semester course in the MATA Building Construction sequence. Students expand their knowledge base with advanced skills, frequently working independently. Students earn their OSHA 10 Card Certification and complete more in-depth work. Upon successful completion of this program, students may be prepared to perform many aspects of building construction and are eligible for sponsored apprenticeship programs. The graduating students receive professional accreditation from The National Center for Construction Education and Research (NCCER) for their course work. Lab Fee: This course does not have a lab fee.

MATA CISCO I H   895101
Grade(s): 11-12   Credit: 0.75
Prerequisite: None
        This first-quarter course covers networking concepts, design, implementation, management and operation at an introductory and advanced level. This course lays the foundation of computer-based training (CBT) modules developed by Cisco Systems and uses the CISCO Certified Network Associate (CCNA) curriculum to prepare students to take the CCNA certification exam. Students learn how to design, install, configure, operate, and troubleshoot simple and complex networks. Topics covered include network architecture (physical and logical), industry standards, protocols, network devices (such as routers, switches, and hubs), media selection, data transmission, and cabling. Students may obtain Introduction to Copper Cabling, Leviton Structured Wiring, and Introduction to Fiber Optic certification through C-Tech. Students study basic standards and proper manufacturing techniques used in the field.
        Lab Fee: This course does not have a lab fee.

MATA CISCO II H   895201
Grade(s): 11-12   Credit: 0.75
Prerequisite: MATA CISCO I H
        This second-quarter builds upon the topics presented in CISCO I.
        Lab Fee: This course does not have a lab fee.

MATA CISCO III H   895301
Grade(s): 11-12   Credit: 0.75
Prerequisite: MATA CISCO II H
        This third-quarter course builds upon the topics presented in CISCO I & II.
        Lab Fee: This course does not have a lab fee.

MATA CISCO IV H   895401
Grade(s): 11-12   Credit: 0.75
Prerequisite: MATA CISCO III H
        This final course in the CISCO sequence builds upon the topics covered in CISCO I, II, and III. This course prepares students to take the Cisco Certified Network Associate (CCNA) certification exam.
        Lab Fee(s): This course does not have a lab fee.

MATA Computer & Digital Animation I H   839100
Grade(s): 11   Credit: 3
Prerequisite: None
        This is the first-year course in the MATA Computer & Digital Animation sequence. Computer & Digital Animation I is an introductory course in digital content creation and animation. Students produce computer-generated models, characters, and animations using professional software. Students study the production pipeline from story idea to final render. The software used is from the Autodesk Entertainment Creation Suite. Software covered includes 3ds Max, and Mudbox. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
        Lab Fee: This course does not have a lab fee.

MATA Computer & Digital Animation II   839006
Grade(s): 12   Credit: 3
Prerequisite: MATA Computer & Digital Animation I
        This is the second-year course in the MATA Computer & Digital Animation sequence. Computer & Digital Animation II is a continuation of topics covered in MATA Computer & Digital Animation I. Students produce CG models, characters, and animations using software from the Autodesk Entertainment Creation Suite. Covered software includes 3dsMax, Maya, Mudbox, Motionbuilder and Sketchbook Designer. Students create content suitable for TV, film, computer simulations, computer games, and architectural visualization. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
        Lab Fee: This course does not have a lab fee.

MATA Computer Integrated Engineering & Design (CIED) I   898500
Grade(s): 11   Credit: 3
Prerequisite: None

      This is the first-year MATA CIED course and provides students with a foundation of skills needed for manufacturing and engineering in today's "high tech" workplace. The course focus is on hands-on, task-based activities where students learn and practice industrial and engineering skills. Students follow a curriculum covering robotics, CADD/CAM, electrical systems, fluid systems, materials engineering, mechanical systems, quality assurance, computer control, solar photovoltaic installation, and wind turbine installation. Students are introduced to Solidworks, Mastercam and mill/lathe CNC programming. MATA CIED gives students a jump-start to pursue careers in engineering technology. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
      Lab Fee: $30.00

MATA Computer Integrated Engineering & Design (CIED) II   898601
Grade(s): 12   Credit: 3
Prerequisite: MATA Computer Integrated Engineering & Design (CIED) I DE

      This is the second-year course in the MATA CIED sequence. MATA CIED II extends the foundational topics covered and developed in MATA CIED I, and students develop proficiency in Solidworks. Students develop a capstone engineering related project throughout this course. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
      Lab Fee: $30.00

MATA Cosmetology I   873701
Grade(s): 11   Credit: 1.5
Prerequisite: None

      The first semester of Cosmetology introduces students to the basics of shampooing and hairstyling, scalp treatments, hair cutting, finger waving, pin curling, roller techniques, chemical relaxing, permanent waving, hair coloring, facials, make-up, wig care, and manicuring. Related subjects include public health, personal hygiene, bacteriology, and salon management. Students are required to purchase a cosmetology kit which includes items needed for the two-year program.
      Lab Fee: $280.00

MATA Cosmetology II   874702
Grade(s): 11   Credit: 1.5
Prerequisite: MATA Cosmetology I

      In this second semester course, students are taught the skills necessary to develop job entry requirements as a cosmetologist by performing the services expected in a professional salon environment. Advanced skills include hair cutting, chemical texture services, hair coloring, lightening, special effects hair color services and color removal application hairstyling, thermal waving and pressing, artificial nail applications, and waxing services. Students also attain training in salesmanship, salon management and ownership, product knowledge, and public relations. Human anatomy and physiology, chemistry and electricity, diseases and disorders of the scalp, skin, and nails are also covered.
      Lab Fee: This course does not have a lab fee.

MATA Cosmetology III   874500
Grade(s): 12   Credit: 3
Prerequisite: MATA Cosmetology II

      This course is the full second year in the MATA Cosmetology sequence. In this advanced course, students build on their theoretical foundation of general sciences and practices in cosmetology to increase proficiency in hair cutting and styling on live models, with attention to professionalism, client consultation, safety, and infection control. Students are trained in safe chemical processes related to chemical texture services and advanced hair coloring techniques. They also develop artistic skills with wigs and hair additions. In addition, students learn to care for skin, hands, and feet, developing experience in providing facials, manicures, pedicures, and nail enhancements. An advanced business management unit focuses on managing the salon. Competency completion prepares the student for the Virginia State Licensing Exam. (this semester course is directly followed by MATA Nail Design Technology).
      Lab Fee: $15.00

MATA Culinary Arts I   875701
Grade(s): 11-12   Credit: 1.5
Prerequisite: None
       This course is the first semester in the MATA Culinary Arts sequence. This pathway is designed to prepare students for employment in the culinary industry or to continue with post-secondary training in such areas as culinary arts, baking and pastry, or restaurant management. Students complete units in the history of hospitality, safety, sanitation, equipment use, recipe calculation and production, management, and professionalism. Commercial methods of food storage, preparation, and handling are practiced. Skills are developed in the preparation of appetizers, soups, salads, meats, fruits, vegetables, breads, garnishes, and desserts. Students are visited by top Culinary schools to expand their knowledge of post-secondary school opportunities. Visits from the placement department are arranged to aid the students with resume development. Employment and interviewing skills will be practiced. Students participate in both on-site and off-site catering events and have many opportunities to use their creativity as they design and prepare food for service and display. Participation in culinary competitions is offered and encouraged. Students will take an OSHA exam.
       Lab Fee: $50.00

MATA Culinary Arts II   875702
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Culinary Arts I
       This course is the second semester in the MATA Culinary Arts sequence. Students will learn advanced production and service skills used in the culinary industry. Nutrition, management skills, marketing, sustainability, and exploration of ethnic cuisines are emphasized. Students will demonstrate knowledge of applying advanced food preparation and baking techniques. Visits from leaders in the local restaurant industry are arranged for students. Technology is utilized to conduct nutritional analysis, menu planning, costing, and inventory control. Students will practice serving guests and dining room set up. Students will use business and math techniques to develop menus. Collaboration with other MATA courses is encouraged through menu design, restaurant design, molecular gastronomy, and off-site catering. Students will complete Workplace Readiness Testing. Students will complete the ServSafe Industry test.
       Lab Fee: This course does not have a lab fee.

MATA Cybersecurity I DE SEM   894201
Grade(s): 11-12   Credit: 3
Prerequisite: None
       In this first-year course of the MATA Cybersecurity program, students enter the world of computer technology and gain practical experience in assembling a computer system. Students will install, configure, and secure various operating systems. Students will troubleshoot computers and peripherals and use system tools and diagnostic software. They develop skills in computer networking and resource sharing. In addition, students explore the relationships between internal and external computer components. Upon successful completion of the course, students may qualify to take the CompTIA A+ certification exam.
       Lab Fee: This course does not have a lab fee.

MATA Cybersecurity II DE SEM   894202
Grade(s): 11-12   Credit: 3
Prerequisite: MATA Cybersecurity I
       In this second-year course of the MATA Cybersecurity program, students continue work in the world of computer technology. Students develop advanced skills in computer networking and resource sharing. Upon successful completion of the course, students may be qualified to take the CompTIA A+, Network +, and/or Security + certification exam.
       Lab Fee: This course does not have a lab fee.

MATA Emergency Medical Technician (EMT) I H   859507
Grade(s): 11-12   Credit: 1.5
Prerequisite: None
       This MATA EMT course is designed to provide training to individuals in order to function independently in a medical emergency and serve as a vital link in the chain of the health care team. This course includes all skills necessary to provide emergency medical care as an attendant-in-charge with a basic life support ambulance service or other specialized rescue service.
       Lab Fee: $35.00

MATA Emergency Medical Technician (EMT) II H   859508
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Emergency Medical Technician (EMT) I

This second semester course builds upon the topics covered in MATA Emergency Medical Technician I. The tasks for this course represent the National Emergency Medical Services Educational Standards. Students build on their knowledge and skills for providing basic life support by focusing on the areas of emergency medical services (EMS) operations, medical emergencies, and management of special patient populations. Supervised field experience outside of school hours is required. Successful completion of all course requirements and instructor endorsement may lead to eligibility to take the Virginia State Psychomotor Exam and the National Registry EMT cognitive exam.

Lab Fee: This course does not have a lab fee.

MATA Environmental Plant Sciences DE   885106
Grade(s): 11-12   Credit: 3
Prerequisite: None

This one-year course focuses on plants as related to environmental responsibility. Topics include forestry, natural resource management and conservation, plant physiology, sustainable agriculture practices, landscaping and design, soil science, propagation, floral design. This course encourages students to interact with professors as well as government and industry professionals. This is a Loudoun Governor's Career and Technical STEM Academy course. Additionally, industry certification may be acquired in the following: Virginia Nursery and Landscape Association as a Certified Horticulturist; Virginia Flower Growers Association as a Certified Greenhouse Operator; Virginia Department of Agriculture and Consumer Service as a Pesticide Technician. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee(s): $35.00

MATA Firefighter I   859701
Grade(s): 11-12   Credit: 1.5
Prerequisite: Must be affiliated with a volunteer fire or rescue department in Loudoun County

During this first semester course, students are taught the Virginia Department of Fire Programs curriculum. Emphasis is placed on moving the new firefighter ahead to be more prepared and assume more of a leadership role within a department. Instruction includes the proper use of personal protective equipment, maneuvering through dark and small areas, use of ladders, use of hoses and nozzles, techniques and equipment for the extinguishment of fires, fire behavior, basic hazardous materials operation/mitigation, and ropes/knots. A combination of classroom study, scenarios, and modular practical experiences prepares students to carry out most fire ground functions under the direct supervision of an officer or experienced firefighter. Students learn to make basic evaluations of safety problems and assume leadership roles in conducting interior attack and search operations.

Lab Fee: $20.00

MATA Firefighter II   859702
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Firefighter I

This course builds upon the professional knowledge gained and skills taught in MATA Firefighting I. Students respond to simulated hazardous-materials incidents and conduct rescue operations, including vehicle extrication. Students react to multi-faceted situations (e.g., caused by simulated terrorism, accidents, and natural disasters) by managing resources such as medivac helicopters, emergency medical personnel, technical rescue teams, and community-based organizations. Students will become familiar with the procedures, equipment, and technologies used by current fire departments. This course challenges students academically, mentally, and physically and meets the standards of National Fire Protection Association (NFPA) leading to Firefighting II certification.

Lab Fee: This course does not have a lab fee.

MATA Graphic Communications I   879701
Grade(s): 11   Credit: 1.5
Prerequisite: None

This course is the first semester course in the MATA Graphic Communications sequence and covers an introduction and investigation of variable topics in graphic design, computer graphics and visual communication principles, theory and practice. Various fundamental design philosophies and applications are examined as students work individually and collaborate in teams to design digital projects. Emphasis on concept driven projects include aspects of designs related to digital techniques of layout, typography and digital image/photo manipulation, digital illustration, layout, animation, and web design. Construction and composition of finished work is created using a variety of interactive productivity software programs, books and various learning resources. The course includes safety standards related to equipment used, research, writing, text reading, discussions, oral presentations, lectures, specific project assignments, and design concept development in a time-based context. In addition, students learn workplace readiness skills of corporate, client-based and public service-based interactive design strategies.

Lab Fee: $75.00

MATA Graphic Communications II   879702
Grade(s): 11   Credit: 1.5
Prerequisite: MATA Graphic Communications I

     This course is the second semester course in the MATA Graphic Communications sequence. This course covers advanced concepts and techniques of design utilizing interactive software to develop and compose a comprehensive professional portfolio. Curriculum includes contracts, copyright issues, interviewing skills, resume and cover-letter writing, design briefs and proposals, freelance business issues, as well as portfolio preparation and presentation. Portfolio presentation includes concepts learned in MATA Graphic Communications I. Under the guidance and supervision of faculty, students learn first-hand how to establish and run a creative design firm by working directly with clients, establishing and forecasting budgets and working within those budgets. In addition, students work with printers and press runs to meet real working deadlines. Students compete in annual design/print competitive association activities and are given the opportunity to obtain PrintEd certifications.

     Lab Fee: This course does not have a lab fee.

MATA Graphic Communications III   879300
Grade(s): 12   Credit: 3
Prerequisite: MATA Graphic Communications II

     This is the third course in the MATA Graphic Communications sequence. This course covers advanced concepts and techniques of design utilizing interactive software to develop and compose a comprehensive professional portfolio. Curriculum includes contracts, copyright issues, interviewing skills, resume and cover-letter writing, design briefs and proposals, freelance business issues, as well as portfolio preparation and presentation. Portfolio presentation includes concepts learned in MATA Graphic Communications I. Under the guidance and supervision of faculty, students learn first-hand how to establish and run a creative design firm by working directly with clients, establishing and forecasting budgets and working within those budgets. In addition, students work with printers and press runs to meet real working deadlines. Students compete in annual design/print competitive association activities and are given the opportunity to obtain PrintEd certifications.

     Lab Fee: $75.00

MATA Health Informatics   861100
Grade(s): 11-12   Credit: 3
Prerequisite: None

     This MATA 1-year pathway explores aspects of Health Informatics to include the history of health information technology (IT), the Electronic Health Record (EHR), ethical and privacy issues, and cybersecurity and data breaches. Students will be introduced to the various technology and trends that affect the healthcare industry.

     Lab Fee: $68.50

MATA Heating, Ventilation, & Air Conditioning (HVAC) I   881701
Grade(s): 11-12   Credit: 1.5
Prerequisite: None

     This course is the first semester course in the MATA Heating, Ventilation, & Air Conditioning (HVAC) sequence. This course provides basic knowledge and skills in residential and commercial air conditioning, refrigeration, and heating. Instruction includes basic electricity, safety, the physics of the refrigeration process, soldering and silver brazing, electrical components and controls, wiring diagrams, basic plumbing, sheet metal fabrication, and duct installation.

     Lab Fee: $35.00

MATA Heating, Ventilation, & Air Conditioning (HVAC) II   881702
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Heating, Ventilation, & Air Conditioning (HVAC) I

     This course is the second semester course in the MATA Heating, Ventilation, & Air Conditioning (HVAC) sequence. Students are provided advanced skills in residential and commercial air conditioning, refrigeration, and heating. The students learn to install, maintain, and repair heating and cooling equipment. Instruction includes air distribution and ventilation systems, refrigeration equipment, oil, gas, electric and heat pump systems, residential plumbing, and electrical layout and installation. Upon successful completion of this course, students are prepared to perform most aspects of HVAC and qualify for sponsored apprenticeship programs. Students may be eligible to take the Environmental Protection Agency (EPA) Certification Exam, the Universal R-410 A Certification Exam, any or all of the 12 HVAC Excellence Exams, and the National Construction Career Test (NCCT).

     Lab Fee: This course does not have a fee.

MATA Introduction to Health and Medical Sciences DE   861000
Grade(s): 10   Credit: 3
Prerequisite: Health Care Providers' Current Immunization Record, Current (within last 3 months) 2-step PPD test, and Medical Insurance (private or school-purchased).

This course introduces students to a vast array of careers within the health and medical professions. Students learn basic medical skills necessary to function safely and efficiently within the medical community. Career exploration allows students to make informed choices within related professions while preparing for future educational requirements. Students are exposed to medical terminology; pharmacology; anatomy and physiology; and therapeutic and diagnostic interventions. Instruction also emphasizes professionalism, legal/ethical issues, and communication skills. Students rotate through various medical settings for observational opportunities, connecting classroom knowledge with real-life experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: $68.50

MATA Masonry I   898701
Grade(s): 11-12   Credit: 1.5
Prerequisite: None

This course is the first course in the MATA Masonry sequence. This course familiarizes students with various materials, tools, equipment, and practices of the masonry trade. The program helps students develop the skills and technical knowledge to lay concrete, block, brick, and ceramic tile. Students also study blueprint reading and do labor and material estimates for residential and commercial projects. Students are eligible to obtain an OHSA-10 certificate.

Lab Fee: $30.00

MATA Masonry II   898702
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Masonry I

This course is the second course in the MATA Masonry sequence. Students advance their skills with concrete, block, brick, and ceramic tile. They complete various projects such as chimneys, fireplaces, sidewalks, and arches. They also learn repair and renovation work. Stone masonry is included and prepares students to design and repair stone walls, fireplaces, sidewalks, and entryways.

Lab Fee: This course does not have a lab fee.

MATA Medical Laboratory Technology I DE   861206
Grade(s): 11   Credit: 3
Prerequisite: Health Care Providers' Current Immunization Record, Current (within last 3 months) 2-step PPD test, and Medical Insurance (private or school-purchased)

The first-year course in Medical Laboratory Technology presents a brief history of the medical laboratory profession, code of ethics, laboratory safety, and phlebotomy followed by an introduction into the tests performed on blood and body fluids in the areas of hematology, chemistry, immunohematology, microbiology, serology and urinalysis. Simulations are performed using microscopes, chemical reagents, computers and automated equipment. Additionally, the students complete a study of body systems and anatomy as they are portrayed in the field of laboratory medicine. The student will use those basic principles and skills necessary to continue their studies in these additional medical laboratory disciplines: Clinical Microbiology, Immunohematology, Coagulation/Hemostasis and Clinical Laboratory Biotechnology Techniques. Students will have the opportunity to earn American Heart Association First Aid and Basic Life Support CPR. Students may have the opportunity to participate in organized field experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: $68.50

MATA Medical Laboratory Technology II DE   861706
Grade(s): 12   Credit: 3
Prerequisite: MATA Medical Laboratory Technology I DE

Students build on the foundational knowledge and skills obtained in Medical Laboratory Technology I. The student uses the basic principles necessary to perform competently in the areas of Hematology, Clinical Chemistry, Clinical Microbiology, Immunohematology, Immunology/Serology, coagulation/Hemostasis, and clinical laboratory biotechnology techniques. Competencies include performing he technique correctly, understanding the theory of the procedures, and the proper interpretation of results. Weekly laboratories stress actual student performance of the routine tests normally seen in the clinical setting. Students may have the opportunity to participate in organized field experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab fee: This course does not have a lab fee.

MATA Pharmacy Technology I DE   861306
Grade(s): 11   Credit: 3
Prerequisite: Health Care Providers' Current Immunization Record, Current (within last 3 months) 2-step PPD test, and Medical Insurance (private or school-purchased)
      This certificate program is designed to provide students with the basic skills and knowledge to begin work as a pharmacy technician. The coursework will fulfill the requirements of the Board of Pharmacy and prepare students to take either the state examination or the national examination administered by the Pharmacy Technician Certification Board. Trained, experienced pharmacy technicians who can demonstrate the right skills and knowledge should be able to pursue many exciting and respected career options or postsecondary study in the pharmacy field. Students have the opportunity to shadow in a professional setting as well as participate in organized field experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
      Lab Fee: $23.00

MATA Pharmacy Technology II DE   862306
Grade(s): 12   Credit: 3
Prerequisite: MATA Pharmacy Technology I DE
      This second year of the certificate program is designed to provide students with the basic skills and knowledge to begin work as a pharmacy technician. The coursework fulfills the requirements of the Board of Pharmacy and prepares students to take either the state examination or the national examination administered by the Pharmacy Technician Certification Board. Emphasis is placed on clinical field experiences and/or coordinated work-experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
      Lab Fee: $45.50

MATA Practical Nursing (PN) I   888701
Grade(s): 12   Credit: 1.5
Prerequisite: Health Care Providers' Current Immunization Record, Current (within last 3 months) 2-step PPD test, and Medical Insurance (private or school-purchased)
      MATA Practical Nursing I is the first semester of a two-year Practical Nursing pathway that is approved by the Virginia Board of Nursing.   Class units include geriatric nursing, nursing skills, nutrition, growth and development, nursing fundamentals, administration of medication, and anatomy and physiology. There is also a required 40-hour clinical experience at a long-term care facility. All students must be able to provide their own transportation to clinical experiences. PN I students are eligible to take the Certified Nurse Aide exam after successful completion of MATA PN I. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
      Lab Fee: $240.00

MATA Practical Nursing (PN) II   888702
Grade: 12   Credit: 1.5
Prerequisite: MATA Practical Nursing (PN) I
      This is the second semester of a two-year Practical Nursing pathway that is approved by the Virginia Board of Nursing. This course continues coverage of the concepts listed for MATA Practical Nursing (PN) I SEM.
      Lab Fee: This course does not have a lab fee.

MATA Practical Nursing (PN) III   888300
Grade(s): Postgraduate   Credit: 3
Prerequisite: MATA Practical Nursing (PN) II
      Practical Nursing II is the second year of a two-year practical nursing program that is approved by the Virginia Board of Nursing. After successful completion of both courses the graduate is eligible to take the NCLEX-PN licensing exam and upon passing is able to work as a Licensed Practical Nurse (LPN). The LPN works in all healthcare settings under the direction of a medical doctor or a registered nurse. Class units taught are medical and surgical nursing, mental health nursing, obstetrical and neonatal nursing, pediatric nursing, advanced nursing skills, and professional issues. There is also a requirement of clinical experience at hospitals and doctors' offices. During clinical time the students give direct patient care under the supervision of the clinical instructors. All students must provide their own transportation to all clinical sites and to the school.   This course is part of the Loudoun Governor's Career and Technical STEM Academy.
      Lab Fee: Tuition

MATA Radiology Technology I DE   861400
Grade(s): 11   Credit: 3
Prerequisite: Health Care Providers' Current Immunization Record, Current (within last 3 months) 2-step PPD test, and Medical Insurance (private or school-purchased)

    The course informs students early in their study of what they can expect from a career in radiologic technology, requirements for certification, options for advancement, and what is required of them as allied healthcare workers. The student develops an understanding of the radiographer as a central member of the health care team and a valuable assistant to the radiologist. This curriculum is designed to prepare the student to understand the anatomy and physiology assessed in diagnostic images of the human body. The student develops an understanding of the safe use of radiation within the medical field. Additional topics of study include the history of the radiological profession, medical ethics, concepts of imaging, radiobiology, radiation protection, and the future of radiologic technology careers. Students may have the opportunity to shadow in professional settings. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
    Lab Fee: $68.50

MATA Radiology Technology II H   861402
Grade(s): 12   Credit: 3
Prerequisite: MATA Radiology Technology I DE

    This course builds upon the topics covered in MATA Radiology Technology I DE. As part of the course content, students are encouraged to engage in volunteer practices within a healthcare setting. Students develop an understanding of the biological and technical factors involved in medical imaging. Emphasis is on extensive anatomy and physiology, disease processes, the physics of medical imaging equipment, and the effect of medical radiation on biologic tissue. Students learn to apply radiation protection procedures for patients and medical imaging personnel. In addition, students expand their understanding of patient care within the radiology department to include assessment of vital signs, immobilization techniques for imaging, safe use of oxygen and pharmacologic during imaging procedures, use of sterile techniques, and evaluation of medical emergencies. This course is part of the Loudoun Governor's Career and Technical STEM Academy.
    Lab Fee: $35.00

MATA Television Production I/Digital Moviemaking I   893701
Grade(s): 11-12   Credit: 1.5
Prerequisite: None

    This first semester course covers camera operation, news reporting, non-linear editing, scriptwriting, audio production techniques, production planning, the business of video production, studio and control room operation, basic marketing, and production techniques. Students use a wide range of professional equipment and produce projects. Students receive hands-on training with computer effects, computer editing, professional camera equipment, and audio production.
    Lab Fee: This course does not have a lab fee.

MATA Television Production II/Digital Moviemaking II   893702
Grade(s): 11-12   Credit: 1.5
Prerequisite: MATA Television Production I/Digital Moviemaking I

    The second semester offers students more advanced editing opportunities and more complex productions. Special productions are created are created individually and in teams. Students use a wide range of professional equipment and produce projects. Students receive hands-on training with advanced computer effects, advanced computer editing, professional camera equipment, and complex audio production.
    Lab Fee: This course does not have a lab fee.

MATA Veterinary Science I   885401
Grade(s): 11-12   Credit: 1.5
Prerequisite: None

    This is the first semester course of the MATA Veterinary Science program. This course orients the student to Veterinary Science, covering topics such as anatomy and physiology, terminology, safety and sanitation, parasitology, posology, animal nutrition, breeds, professional conduct, office management, and emerging technologies in animal agriculture. Students are involved in performing clinical exams, conducting laboratory and hospital procedures and handling animals coordinated with area veterinary clinics and hospitals.
    Lab Fee: $75.00

MATA Veterinary Science II 885402
Grade(s): 11-12 Credit: 1.5
Prerequisite: MATA Veterinary Science I

This is the second semester course of the Veterinary Science program. Students expand their knowledge of animal science and the care of animals, including animal structure and function, microbes and disease prevention, parasitology, and genetics and breeding. Students develop more advanced skills and techniques for assisting the veterinarian/technician in the following areas: performing first aid and surgery, applying aseptic techniques, performing technical functions, administering medication, handling death and dying, working with wildlife, and performing office functions. On-the-job clinical instruction coordinated by the instructor may be included in veterinary offices or animal clinics.

Lab Fee: This course does not have a lab fee.

MATA Welding I DE 896701
Grade(s): 11 Credit: 1.5
Prerequisite: None

This first semester course consists of instruction in the set up and safe operation of Oxy-fuel Welding and Cutting, Plasma Arc cutting, Shielded Metal Arc and beginning GMAW welding processes. Students are trained in welding, cutting, and brazing. Class activities provide instruction in art and ornamental welding, preparation for the American Welding Society (AWS) Test, and construction and repair of metal projects.

Lab Fee(s): $30.00

MATA Welding II DE 896702
Grade(s): 11 Credit: 1.5
Prerequisite: MATA Welding I

Emphasis in this course is on Shielded Metal Arc Welding in the horizontal, in all position, and pipe. Students have the opportunity to practice for the AWS's Limited and Unlimited Welding Thickness Test. Welding certification options are available. Advanced work on the MIG and TIG processes is included.

Lab Fee: This course does not have a lab fee.

MATA Welding III DE 896306
Grade(s): 12 Credit: 3
Prerequisite: MATA Welding II DE

This welding capstone course teaches the industry's emerging technologies and how to demonstrate Gas Tungsten Arc Welding (GTAW) and Shielded Metal Arc Welding (SMAW) pipe tests. Students are prepared to earn relevant industry credentials toward employment in production or manufacturing facilities. This course counts as an elective credit.

Lab fee: $30.00

The following matrix identifies electives in each discipline of the regular instructional program that can be used to satisfy the graduation requirement of a two (2) year sequence of focused sequential electives.

ENGLISH SEQUENTIAL ELECTIVES					
Year One Course Name	Course Number	Credits	Year Two Course Name	Course Number	Credits
Introduction to Journalism	187000	1.0	Newspaper Journalism I	188000	1.0
			Newspaper Journalism II	188002	1.0
			Newspaper Journalism III	188003	1.0
Introduction to Journalism	187000	1.0	Photojournalism I	189001	1.0
			Photojournalism II	189002	1.0
			Photojournalism III	189003	1.0
Writing Center I	160801	1.0	Writing Center II	160802	1.0

ENGLISH LEARNERS SEQUENTIAL ELECTIVES					
Year One Course Name	Course Number	Credits	Year Two Course Name	Course Number	Credits
EL Literacy 1	190011	1.0	EL Literacy 2	190012	1.0
Pre-Newcomer EL Math Concepts	588005	1.0	Newcomer EL Math Concepts	588010	1.0
Newcomer English	394010	1.0	English as a World Language	395010	1.0

FINE ARTS SEQUENTIAL ELECTIVES					
Year One Course Name	Course Number	Credits	Year Two Course Name	Course Number	Credits
Art I	240000	1.0	Art II	241000	1.0
			Art III	242000	1.0
			Computer Graphic Design	232700	0.5
			Ceramics	245000	0.5
			Drawing and Painting	231700	1.0
			Photography	245700	0.5
				245600	1.0
			Sculpture	244700	1.0
Survey of Art and Architecture History I	242770	0.5	Survey of Art and Architecture History II	248700	0.5
Music Theory/History	262000	1.0	AP Music Theory	262100	1.0
Concert Band I	272000	1.0	Concert Band II	274000	1.0
Beginning Orchestra	275000	1.0	Intermediate Orchestra	275003	1.0
			Advanced Orchestra	275002	1.0
			Artist Orchestra	275001	1.0

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Jazz Ensemble	276000	1.0	Jazz Ensemble	276000	1.0
Beginning Guitar	293000	1.0	Intermediate Guitar	294000	1.0
			Advanced Guitar	295000	1.0
			Artist Guitar	296000	1.0
Mixed Chorus	280000	1.0	Advanced Mixed Chorus	282000	1.0
Small Vocal Chorus	278000	1.0	Small Vocal Chorus*	278000	1.0
Men's Chorus	284000	1.0	Men's Chorus*	284000	1.0
Women's Chorus	286000	1.0	Women's Chorus*	286000	1.0
Theatre Arts I	250000	1.0	Theatre Arts II	251000	1.0
			Theatre Arts III	252000	1.0
Technical Theatre I	254000	1.0	Technical Theatre II	255000	1.0
			Drama Projects: Musical Theatre	257000	1.0
			Advanced Stagecraft DE	259006	1.0
Introduction to Theatre Arts DE	258006	1.0	Theatre History/Literature and Performance DE	256006	1.0

HEALTH AND PHYSICAL EDUCATION SEQUENTIAL ELECTIVES					
Year One Course Name	Course Number	Credits	**Year Two Course Name**	Course Number	Credits
Introduction to Outdoor Education	461001 461701	1.0 0.5	Advanced Outdoor Education	461002 461702	1.0 0.5
Personal Fitness	468001 468701	1.0 0.5	Personal Fitness*	468001 468701	1.0 0.5
Introduction to Weight Training	462001 462701	1.0 0.5	Advanced Weight Training	462003 468702	1.0 0.5
Lifetime Sports	466001 466701	1.0 0.5	Lifetime Sports*	466001 466701	1.0 0.5
Lifetime Fitness	469001 469701	1.0 0.5	Lifetime Fitness*	469001 469701	1.0 0.5
Introduction to Strength and Conditioning	463001 463701	1.0 0.5	Advanced Strength and Conditioning	463003 463703	1.0 0.5
Introduction to Team Sports	464001 464701	1.0 0.5	Advanced Team Sports	464002 464702	1.0 0.5
Introduction to Yoga	467001 467701	1.0 0.5	Advanced Yoga	467002 467702	1.0 0.5

SOCIAL SCIENCE AND GLOBAL STUDIES ELECTIVES					
Year One Course Name	Course Number	Credits	**Year Two Course Name**	Course Number	Credits
Psychology	786700	1.0	AP Psychology	787100	1.0

	786V00	1.0			

WORLD LANGUAGE SEQUENTIAL ELECTIVES**					
Year One Course/Level	Course Number	Credits	**Year Two Course/Level**	Course Number	Credits
American Sign Language I	380000	1.0	American Sign Language II	382000	1.0
English as a World Language*	395010	1.0	English as a World Language*	395010	1.0
French I	340000 34100V	1.0	French II	342000 34200V	1.0
German I	370000 37100V	1.0	German II	372000 37200V	1.0
Latin I	350000 35100V	1.0	Latin II	352000 35200V	1.0
Mandarin Chinese I	321000 396V00	1.0	Mandarin Chinese II	331000 397V00	1.0
Newcomer English*	394010	1.0	Newcomer English*	394010	1.0
Spanish for Fluent Speakers I	367000	1.0	Spanish for Fluent Speakers II	367300	1.0
Spanish I	360000 36100V	1.0	Spanish II	362000 36200V	1.0
American Sign Language III	383000	1.0	American Sign Language IV H American Sign Language IV DE	384800 284506	1.0
French III	343000 34300V	1.0	French IV H	344000	1.0
German III	373000	1.0	German IV H	374000	1.0
Latin III	353000	1.0	Latin IV H	354000	1.0
Mandarin Chinese III	334000	1.0			
Spanish for Fluent Speakers III H	367500	1.0			
Spanish III	363000 36300V	1.0	Spanish IV H	364000	1.0
French V H French V DE	345000 346006	1.0			
German V H German V DE	375000 376006	1.0			
Latin V H Latin V DE	356000 356006	1.0			
Spanish V H	365000	1.0			

Spanish V DE	363006				
AP French Language/Culture	345100	1.0			
AP German Language/Culture	375100	1.0			
	359100	1.0			
AP Latin	365100	1.0	AP Spanish Literature/Culture	365200	1.0
AP Spanish Language/Culture					

CAREER AND TECHNICAL EDUCATION (CTE) SEQUENTIAL ELECTIVES* BUSINESS AND INFORMATION TECHNOLOGY**					
Year One Course Name	**Course Number**	**Credits**	**Year Two Course Name**	**Course Number**	**Credits**
Accounting	830000	1.0	Advanced Accounting	831000	1.0
			Business Law SEM **and**	835700	0.5
			Business Management SEM	836700	0.5
			Computer Information Systems	828001	1.0
			Design, Multimedia, and Web Technologies	839001	1.0
			Intro to Business and Marketing	821000	1.0
AET Entrepreneurship I DE	824306	1.0	Accounting	830000	1.0
			AET Entrepreneurship II DE	824406	1.0
			Business Law SEM **and**	835700	0.5
			Business Management SEM	836700	0.5
			Computer Information Systems	828001	1.0
			Fashion Design & Merchandising SEM **and** Independent Living SEM	846700	0.5
			Introduction to Business and Marketing	840700	0.5
			Marketing Co-op or Marketing Non Co-op	821000	1.0
				822000	2.0
			Real Estate Marketing	822100	1.0
			Sports and Entertainment Marketing	821200	1.0
				821100	1.0

			Travel and Tourism Marketing Sales	822500	1.0
Business Law SEM	835700	0.5	Business Management SEM **and**	836700	0.5
			Accounting	830000	1.0
			Computer Information Systems	828001	1.0
			Design, Multimedia, and Web Technologies	839001	1.0
			Intro to Business and Marketing	821000	1.0
Business Management SEM	836700	0.5	Business Law SEM **and**	835700	0.5
			Accounting **or**	830000	1.0
			Computer Information Systems	828001	1.0
			Design, Multimedia, and Web Technologies	839001	1.0
			Intro to Business and Marketing **or**	821000	1.0
			Fashion Design and Merchandising SEM **and**	846700	0.5
			Marketing Co-op **or**	822000	2.0
			Marketing Non-Co-op	822100	1.0
Computer Information Systems	828001	1.0	Accounting	830000	1.0
			Advanced Computer Information Systems	828002	1.0
			App Development I Business Law SEM **and**	828500	1.0
			Business Management SEM	835700	0.5
			Cybersecurity Software	836700	0.5
			Operations	894103	1.0
			Design, Multimedia, and Web Technologies	839001	1.0
			Intro to Business and Marketing	821000	1.0
Design, Multimedia and Web Technologies	839001	1.0	Accounting	830000	1.0
			Advanced Design, Multimedia, and Web Technologies	839002	1.0
					1.0
					1.0
			Business Law SEM **and**	835700	0.5
			Business Management SEM	836700	0.5

Year One Course Name	Course Number	Credits	Year Two Course Name	Course Number	Credits
			Computer Information Systems	828001	1.0
			Cybersecurity Software Operations	894103	1.0
			Intro to Business and Marketing	821000	1.0
Introduction to Cybersecurity	834101	1.0	Cybersecurity in Manufacturing	894102	1.0
			Cybersecurity in Marketing	894104	1.0
			Cybersecurity Software Operations	894103	1.0
Introduction to Business and Marketing	821000	1.0	Accounting	830000	1.0
			Business Law SEM **and**	835700	0.5
			Business Management SEM	836700	0.5
			Computer Information Systems	828001	1.0
			Design, Multimedia, and Web Technologies	839001	1.0
			Marketing Co-Op **or**	822000	2.0
			Marketing Non-Co-Op	822100	1.0
			Real Estate Marketing	821200	1.0
			Sports and Entertaining Marketing	821100	1.0
			Travel & Tourism Marketing and Sales	822500	1.0

FAMILY AND CONSUMER SCIENCE					
Year One Course Name	Course Number	Credits	**Year Two Course Name**	Course Number	Credits
Early Childhood Education I	844100	2.0	Early Childhood Education II	844200	2.0
			Early Childhood Education Seminar II DE	844406	2.0
			Gourmet Foods	845100	1.0
			Teacher Cadet I DE	844006	1.0
Early Childhood Education Seminar I DE	844306	2.0	Early Childhood Education II	844200	2.0
			Early Childhood Education Seminar II DE	844406	2.0
			Gourmet Foods	845100	1.0
			Teacher Cadet I DE	844006	1.0

Fashion Careers I	846100	2.0	Fashion Careers II	846200	2.0
Fashion Design and Merchandising SEM	846700	0.5	Independent Living SEM **and**	840700	0.5
			Fashion Careers I	846100	2.0
			Introduction to Business and Marketing	821000	1.0
			Marketing Co-op or	822000	1.0
			Marketing Non-Co-op	822100	1.0
Gourmet Foods SEM	845700	0.5	Human Development SEM **or**	846000	0.5
			Independent Living SEM **and**	840700	0.5
			Early Childhood Education I	844100	2.0
			Early Childhood Education Seminar I DE	844306	2.0
			Introduction to Culinary Arts	875101	1.0
			Introduction to Early Childhood Education	844003	1.0
			Food Science and Dietetics	845200	1.0
			MATA Culinary Arts I SEM	875100	1.5
Gourmet Foods	845100	1.0	Early Childhood Education I	844306	2.0
			Early Childhood Education Seminar I DE	875101	2.0
			Independent Living SEM **and**	840700	0.5
			Human Development SEM	846000	0.5
			Introduction to Culinary Arts	875101	1.0
			Introduction to Early Childhood Education	844003	1.0
			Food Science and Dietetics	845200	1.0
			MATA Culinary Arts I SEM	875100	1.5
Human Development SEM	846000	0.5	Gourmet Foods SEM **or**	845700	0.5
			Independent Living SEM **and**	840700	0.5
					2.0
				844003	1.0

			Introduction to Early Childhood Education	844100	2.0
			Early Childhood Education I	844306	2.0
			Early Childhood Education Seminar I DE Teacher Cadet I DE	844006	1.0
Introduction to Culinary Arts	875101	1.0	Food Science and Dietetics	845200	1.0
			Gourmet Foods	845100	1.0
			Independent Living SEM **and**	840700	0.5
			Gourmet Foods SEM	845700	0.5
			MATA Culinary Arts I SEM	875100	1.5
Introduction to Early Childhood Education	844003	1.0	Early Childhood Education I	844100	2.0
			Early Childhood Education Seminar I DE	844306	2.0
			Gourmet Foods SEM **and** Independent Living SEM **or**	845700 840700	0.5 0.5
			Human Development SEM	846000	0.5
			Gourmet Foods Teacher Cadet I DE	845100 844006	1.0 1.0
Project Management	827000	1.0	Teacher Cadet I DE	844006	1.0
Teacher Cadet I DE	844006	1.0	Early Childhood Education I	844100	2.0
			Early Childhood Education Seminar I DE	844306	2.0
			Project Management	827000	1.0
			Teacher Cadet II	844500	1.0
MARKETING EDUCATION					
AET Entrepreneurship I DE	824306	1.0	Accounting	830000	1.0
			AET Entrepreneurship II DE	824406	1.0
			Business Law SEM **and**	835700	0.5
			Business Management SEM	836700	0.5
				828001	1.0

			Computer Information Systems	846700	0.5
			Fashion Design & Merchandising SEM **and**	840700	0.5
			Independent Living SEM	821000	1.0
			Introduction to Business and Marketing	822000	2.0
			Marketing Co-op **or**	822100	1.0
			Marketing Non Co-op	821200	1.0
			Real Estate Marketing	821100	1.0
			Sports and Entertainment Marketing	822500	1.0
			Travel and Tourism Marketing Sales		
Introduction to Cybersecurity	834101	1.0	Cybersecurity in Manufacturing	894102	1.0
			Cybersecurity in Marketing	894104	1.0
			Cybersecurity Software Operations	894103	1.0
Introduction to Business and Marketing	821000	1.0	Accounting	830000	1.0
			Business Law SEM **and**	835700	0.5
			Business Management SEM	836700	0.5
			Computer Information Systems	828001	1.0
			Design, Multimedia, and Web Technologies	839001	1.0
			Marketing Co-Op **or**	822000	2.0
			Marketing Non-Co-Op	822100	1.0
			Real Estate Marketing	821200	1.0
			Sports and Entertaining Marketing	821100	1.0
			Travel & Tourism Marketing and Sales	822500	1.0
Marketing Co-op	822000	2.0	Advanced Marketing Co-op	823000	2.0
			Advanced Marketing Co-op Seminar DE	823006	2.0
			Advanced Marketing Non Co-op	823100	1.0
			Advanced Marketing Non Co-op Seminar DE	823106	1.0
			Business Management SEM **and**	836700	0.5

Year One Course Name	Course Number	Credits	Year Two Course Name	Course Number	Credits
			Fashion Design & Merchandising SEM	846700	0.5
			Real Estate Marketing	821200	1.0
			Sports and Entertainment Marketing	821100	1.0
			Travel and Tourism Marketing and Sales	822500	1.0
Marketing Non Co-op	822100	1.0	Advanced Marketing Co-op	823000	2.0
			Advanced Marketing Co-op Seminar DE	823006	2.0
			Advanced Marketing Non Co-op	823100	1.0
			Advanced Marketing Non Co-op Seminar DE	823106	1.0
			Business Management SEM **and**	836700	0.5
			Fashion Design & Merchandising SEM	846700	0.5
			Real Estate Marketing	821200	1.0
			Sports and Entertainment Marketing	821100	1.0
			Travel and Tourism Marketing and Sales	822500	1.0
Sports and Entertainment Marketing	821100	1.0	Marketing Co-op **or** Marketing Non Co-op	822000 822100	2.0 1.0
Travel and Tourism Marketing Sales	822500	1.0	Marketing Co-op **or** Marketing Non Co-op	822000 822100	2.0 1.0

MILITARY SCIENCE

Year One Course Name	Course Number	Credits	Year Two Course Name	Course Number	Credits
Naval Science I	848000	1.0	Naval Science II	849000	1.0

TECHNOLOGY AND ENGINEERING EDUCATION

Year One Course Name	Course Number	Credits	Year Two Course Name	Course Number	Credits
Aerospace Science I	810000	1.0	Aerospace Science II	810500	1.0
Architectural Drawing and Design	854000	1.0	Advanced Drawing and Design	854500	1.0
			Engineering Drawing and Design	853500	1.0
Engineering Drawing and Design	853500	1.0	Advanced Drawing and Design	854500	1.0
				854000	1.0

			Architectural Drawing and Design		
Introduction to Cybersecurity	834101	1.0	Cybersecurity in Manufacturing	894102	1.0
			Cybersecurity in Marketing	894104	1.0
			Cybersecurity Software Operations	894103	1.0
Manufacturing Systems I	852400	1.0	Manufacturing Systems II	852800	1.0
			Technology of Robotic Design	803000	1.0
Materials and Process	852000	1.0	Manufacturing Systems I	852400	1.0
Technical Drawing & Design	853000	1.0	Architectural Drawing and Design	854000	1.0
			Engineering Drawing and Design	853500	1.0
			Technology Foundations	856000	1.0
Technology Foundations	856000	1.0	Technical Drawing and Design	853000	1.0
			Technology Transfer	857000	1.0
Technology of Robotic Design	803000	1.0	Manufacturing Systems I	852400	1.0

Critical Thinking

Communication

Collaboration

Loudoun County Public Schools

21000 Education Court

Ashburn, VA 20148

Citizenship

Creative Thinking

Empowering all students to make meaningful contributions to the world