

Carpe Scientiam

COURSE CATALOG 2016-17



Chapter 1

GENERAL
INFORMATION



General Information

L&N STEM Academy

ADMINISTRATION

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Empower. Inspire. Impact.

Carpe Scientium

KCS Mission Statement

Knox County Schools will enable all students to achieve academic success based on established performance standards and students' individual needs and abilities, by providing highly trained teachers, a nurturing environment, and by partnering with parents and the community to ensure that a commitment to education continues outside the classroom.

School Board's Mission

The Knox County Board of Education, as the governing body for the school system, evaluates needs, sets policy, allocates resources, and implements strategies to ensure all students have access to a quality education.

School Board's Vision

The entire community working together to attain the highest quality of life for all the people of Knox County.



The L&N STEM Academy is an agent of transformational change in STEM education where all students achieve at their highest levels. Design principles are the hallmark of our school in learning, teaching, and leading. Universal high standards, individualized learning plans, and community partnerships ensure that every student has equitable access to challenging coursework, exceptional instruction, and empowering relationships with mentors.

Students experience a rich integrated curriculum aligned and focused towards STEM disciplines. Faculty deliver inquiry-based instruction, challenging students to solve real world problems and develop critical thinking skills. We equip our students with the skills and dispositions that will prepare them for post-secondary learning opportunities, rewarding careers, meaningful roles in the American democracy, and enlightened and fulfilling lives.



As a platform school, we partner to expand the capacity of STEM teaching and learning with collaborating schools, districts, and industry.

In short, we envision a future where we achieve academic excellence for all of our students and for our region. To achieve this vision, we are establishing priorities and practices designed to foster a school culture of universal aspiration towards excellence, social justice, and shared responsibility of outcomes.

The students of the L&N STEM Academy practice the habits of Inquiry, Design, Professionalism, Innovation, Critical Thinking, and Collaboration. These six habits are infused through all content and curricula, as they are essential 21st Century skills, allowing students to be successful collegiate scholars and community members once they graduate from the L&N STEM Academy.

Students at the L&N STEM Academy will experience a rigorous and challenging academic experience. All levels of learners are welcome, but a focused, devoted effort is required to be successful.

Students will take eight courses simultaneously on a rotating block schedule. Four classes are taken on an “L” day, while four additional classes are taken on “N” days. All courses are a year long. Each class period is approximately 90-minutes long.



All incoming students will complete at least 2 years of Latin beginning their Freshman year. After completing Latin 2 during Sophomore year, students will be able to take additional foreign language options or continue studying Latin at higher levels.

Students are expected to be active participants in their learning. Students are expected to seek out assistance from teachers when needed. Advisories will take place 1 day per week for students to interact with 1 teacher over all 4 years of attendance. In addition, students will be able to explore personal interests during Genius Hour activities that rotate every 9 weeks. Students are encouraged to attend tutoring sessions held by their instructors to deepen their learning and access the support often needed by students to be successful in a challenging academic environment.

Students are expected to progress through each grade level, achieving at high levels. Should students not meet the academic or behavioral expectations of the L&N STEM Academy, they are at risk of having their transfer revoked.

KNOX COUNTY GRADUATION REQUIREMENTS		
Required Courses	Grade Taken	No. of Credits
English 1, 2, 3, 4	9-12	4
Math (Algebra 1, Geometry, Algebra 2, additional higher math course)*	9-12	4
Science (Biology, Chemistry or Physics, additional lab science)	9-11	3
World History and Geography	9	1
US Government and Civics	10	1
US History and Geography	11	1
Economics	12	1/2
Personal Finance	12	1/2
Lifetime Wellness	10	1
Physical Education	9-12	1/2
Elective Focus of Study***	9-12	3
Fine Art**	9-12	1
Foreign Language	9-12	2

Students are required to earn 28 total credits. Of these 28 credits, 22 are required credits shown on the chart to the left. Students must earn at least 6 additional credits above the 22 required credits.

All students will be required to enroll in a math course each year of high school.


** The Fine Art and Foreign Language requirements may be waived and be replaced with courses designed to enhance and expand the Elective Focus for students who are sure they are not going to attend a 4-year university.

*** The three credits of Elective Focus must be in one of seven areas

Career and Technical Education (CTE)	Advanced Placement (AP)
Science and/or Math	ROTC or Physical Education
Humanities	Human Services
Fine Arts	

University Admissions. Students must complete two units of the same world language and one unit of fine/performing arts in order to meet the college/university requirements.

Graduation Requirements for Knox County Schools and the L&N STEM Academy



And a Fine Art
 This could be an Art class, Orchestra, Band, Choir/Ensemble, or Theater
1 Credit is REQUIRED

Be sure to know what is required to graduation before you begin the process of requesting courses for an upcoming year.

L&N STEM Academy

Student Course Selection Planning Guide

The following document is for planning purposes only. Course offerings and teacher recommendations will determine the exact placement for each student. The progression of classes is shown by an arrow (➔).

English:	English 9	English 10	English 11	English 12
Start at: (English Explore score 20-25)	Honors <small>Will be automatically placed in Honors World History & Geography & Latin!</small>	Honors ➔	AP English Language and Composition ➔	AP English Literature and Composition
Start at: (Explore score 19 or below)	Standard (CP) <small>(+Etymology)</small>	Standard (CP) ➔	Standard (CP) ➔	DE/Standard (CP)

You must have a 20 on your English & Reading EXPLORE score in order to take Latin 1 your Freshman year, otherwise Etymology.

Math:	Math 9 th	Math 10 th	Math 11 th	Math 12 th
Start at: (Algebra I HS Level in 8 th grade or rec)	Hon Geometry ➔	Hon Algebra II ➔	Hon Pre-Calculus ➔	AP Calculus AB & AP Calculus BC
Start at: (EXPLORE Score 19-25)	Hon Algebra I ➔	Hon Geometry ➔	Hon Algebra II ➔	Hon Pre-Calculus (AP Calculus AB & AP Calculus BC)
Start at: (EXPLORE Score 15-18)	Algebra I ➔	Geometry ➔	Algebra II ➔	Adv. Math: Finite, Pre-Calculus, AP Stats, AP Computer Science, AP Physics

Science	Science 9 th	10 th Science	11 th Science	12 th Science
Start at: (Must take Physical Sci AND Algebra I HS Level in 8 th grade)	Honors Chemistry I ➔	Honors Biology I ➔	Honors Chem II & AP Chem Hon Bio II (w/AP Bio Intro Organic Bio-Chem, Anatomy & Physiology Astronomy, Geology) ➔	Advanced Level Science: Honors Chem II & AP Chem Hon Bio II (w/AP Bio Hon Physics / AP Physics, Intro Organic Bio-Chem, AP Environmental Science Anatomy & Physiology Astronomy)
Start at: (EXPLORE Math Score 19-25)	Honors Physical World Concepts (Must have honors math rec) ➔	Honors Chemistry I ➔	Honors Biology I ➔	Honors Chem II & AP Chem Hon Bio II (w/AP Bio Intro Organic Bio-Chem, Anatomy & Physiology Astronomy, Geology)
Start at: (Explore Math Score 18 or below)	Physical World Concepts ➔	Chemistry I ➔	Biology I ➔	Honors Chem II & AP Chem Hon Bio II (w/AP Bio Intro Organic Bio-Chem, Anatomy & Physiology Astronomy, Geology)

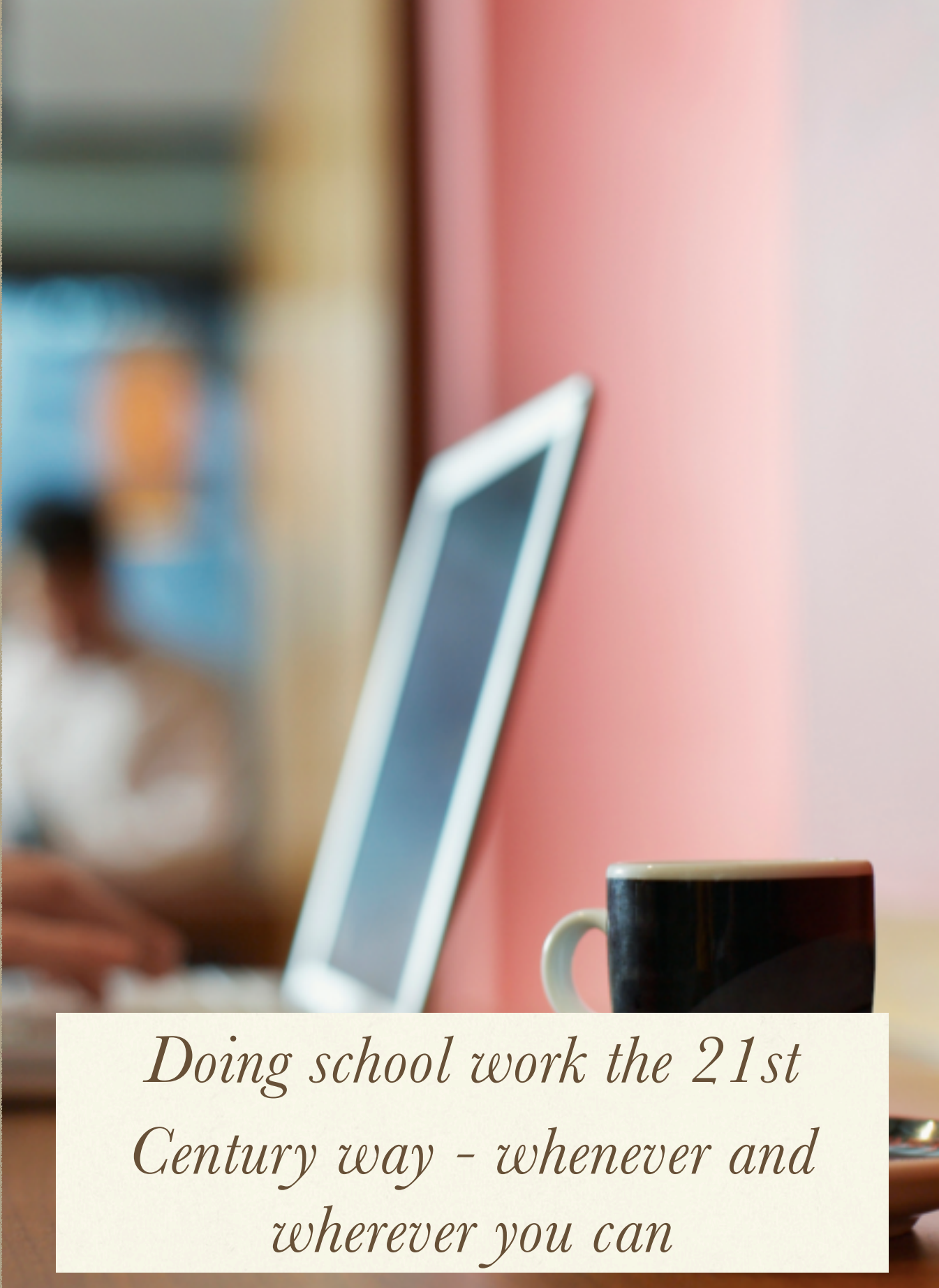
Social Studies	Social Studies 9 th	Social Studies 10 th	Social Studies 11 th	Social Studies 12 th
Start at: (English & Reading Explore score 20-25)	Honors World History & Geography (With Hon English I) ➔	AP Comparative Government & Politics (w/Honors English II) ➔	AP US History (w/AP English III) ➔	Economics/ Personal Finance
Start at: (Eng & Reading Explore score 19 or below)	World History & Geography ➔	U. S Government / Civics (Both -.5 credits each) ➔	CP or DE US History & Geography or ➔	Economics/ Personal Finance

Adapted from Susan Hall, KMS 2/18/2014 Updated for STEM by Elisha Basser 11/2014

L&N STEM ACADEMY AP COURSE EXPECTATIONS 2016-17

Course	Grade Level	Amount of Reading Per Week	Outside of Class Time Expected (Reading, Homework, etc)	Summer Assignments
AP Combined Studies (AP US History & AP Language & Composition)	Grade 11	60-80 pages per week	6-8 hours per week	Yes, multiple assignments to satisfy both English and History
AP US Government	Grade 10	30-60 pages per week	3-5 hours per week	Yes
English Lit. & Composition	Grade 12	60-120 pages per week (fiction & poetry)	3-5 hours per week	Yes
AP European History	Grades 10-12	20-50 pages per week	3-4 hours per week	Yes
AP Psychology	Grades 11-12	40 pages per week	3-5 hours per week	No
AP Human Geography	Grade 9	30-60 pages per week	3-5 hours per week	Yes
AP Music Theory	Grades 11-12	10-20 pages per week	3-5 hours per week	Yes
AP Art Studio	Grades 11-12	Portfolio and Sketchbook	2-4 hours per week	Yes
AP Physics 1	Grades 11-12	30 pages per week	3-5 hours per week	No
AP Computer Principles	Grades 10-12	30-40 pages per week	6-7 hours per week	Yes
AP Computer Science	Grades 11-12	30 pages per week	2-3 hours per week	No
AP Environmental Science	Grades 11-12	20-30 pages per week	3-5 hours per week	Yes
AP Biology	Grades 11-12	30-40 pages	3-5 hours per week	Yes
AP Chemistry	Grades 10-12	30-50 pages	6-8 hours per week (2 classes)	Yes

Types of Courses Offered



*Doing school work the 21st
Century way - whenever and
wherever you can*

At the L&N STEM Academy we are excited to prototype new avenues of learning. We have a number of ways instruction will be provided at our school. They include: Traditional, Blended, Facilitated Virtual, and Virtual. In each course description, you will find the type of instruction indicated in bold. Here is a snapshot of what each of these mean.

Traditional Learning

Traditional classes are most recognizable as being like other high school classes across our district. Students meet with the teacher in a classroom during M, L, or N days. Although classes may meet for different lengths of time (some 2 days per week, others 3 days per week), the primary form of instruction is in the classroom with the instructor doing collaborative learning with other students. The vast majority of our classes at the L&N are still in the traditional model.

Blended Learning

Blended learning, in its simplest terms, is a course built on two foundations. First, there is time with a teacher in a classroom or office setting. Second, there is work completed independently online in various formats.

The time with the teacher will vary from course to course. At times, our blended learning classes will have an established time in the schedule when teachers will meet with students in a classroom to discuss aspects of their learning. Class content could be made up of lecture time, group discussion, testing, small group work, or a combination of these. During this time, students have the opportunity to ask questions and dive further into the study of the subject. Teachers closely monitor the progress of all students and

may take this opportunity to offer more personalized tutoring or other interventions for students who are struggling with the content. Blended Learning classes require teacher approval in addition to any other prerequisites for the course.

Facilitated Virtual Learning

Some of our classes are primarily online learning opportunities for our students. Facilitated virtual learning classes have a meeting time with the teacher (usually one day a week) where attendance may be required. However, instruction during this time is limited or may be missing entirely.

The students have an opportunity to work with teacher if necessary, but all of the instruction and assessments may be done online in a virtual environment. If students are performing at, or above, expectations, they may be dismissed from the weekly meeting and continue their online course work from another area of the campus in a supervised environment.

In some instances, Facilitated Virtual Learning may require students to interview with the teacher before gaining approval to attend the course.

Virtual Learning

A very small number of classes will be offered entirely online. Students will have a section in their schedule designated for this class, but there will be no classroom to attend. Instead, they will work in the Commons or other areas of the campus.

Students in virtual learning scenarios will have a teacher of record who will supervise their work and make sure the students are on track to finish the course on time with a passing grade.

If students need help, they can arrange to meet with the teacher of record before or after school, or by email.

Virtual Learning requires both teacher and administrator approvals. Virtual Learning classes may not be requested by a student. They are decided on a case-by-case basis. They are only approved when circumstances do not offer any other solutions.

	TRADITIONAL	BLENDED	FACILITATED VIRTUAL	VIRTUAL
Has learning objectives, grades, and assessments to demonstrate mastery	YES	YES	YES	YES
Has regularly scheduled meeting room and time	YES	YES	YES	NO
Student must attend every meeting time all year	YES	YES	YES	NO
Teachers available for guidance, tutoring, and other forms of assistance	YES	YES	YES	YES
Student responsible for meeting all deadlines and completing content	YES	YES	YES	YES
Student gets lessons primarily from outside sources	NO	YES	YES	YES
Student has face-to-face time with the teacher	YES	YES	NOT ALWAYS	NO
Requires full student ownership and discipline	YES	YES	YES	YES

Why So Many Options?

We want to be forward looking at the L&N STEM Academy. Colleges, for example, are requiring online learning modules for their students in greater and greater numbers each year. By exposing our students to this environment on a limited scale in high school, we will better prepare our students to succeed in college.

By design, blended learning and virtual formats give students more control over the time, place, path, or pace of their learning. Content is offered to students that allows them to work ahead of the rest of the class if they want. Students get more ownership of their learning by setting goals and tracking their own progress. And, it helps foster better self-advocacy in students by encouraging a growth mindset and a passion for learning.

Self-advocacy establishes a strong work ethic in our students. In blended and virtual learning, more and more responsibility for learning, keeping up with timelines and project details, working in cohesive groups, and advocating for one's self moves to the student. These important life skills that are part of blended learning by default.

Rising Juniors and Seniors who think they would qualify for a blended or facilitated virtual learning experience at the L&N STEM Academy, may request a recommendation from their current teacher for courses available in these formats.

Genius Hour



*Failure is simply the opportunity to
begin again, this time more intelligently*

~

What is Genius Hour?

Genius hour is a movement that allows students to explore their own passions and encourages creativity in the classroom. It provides students a choice in what they learn during a set period of time during school. It's not easy to determine where the idea was originally created, but there are at least two events that have impacted genius hour.

Genius Hour Origins

The search-engine giant, Google, allows its engineers to spend 20% of their time to work on any pet project that they want.

The idea is very simple. Allow people to work on something that interests them, and productivity will go up. Google's policy has worked so well that it has been said that 50% of Google's projects have been created during this creative time period. Ever heard of Gmail or Google News? These projects are creations by passionate developers that blossomed from their their 20-time projects.

Another origin of genius hour projects came from the book *Drive* by best-selling author, Daniel Pink. In a blog post he writes about how the Google-time projects are also used in other corporations.

Each week, employees can take a Genius Hour — 60 minutes to work on new ideas or master new skills. They've used that precious sliver of autonomy well, coming up with a range of innovations including training tools for other branches.

Genius Hour in Education

The same genius hour principles apply in the classroom as they do in the corporate environment. The teacher provides a set amount of time for the students to work on their passion projects. Students are then challenged to explore something to do a project over that they want to learn about. They spend several weeks researching the topic before they start creating a product that will be shared with the class/school/world. Deadlines are limited and creativity is encouraged. Throughout the process the teacher facilitates the student projects to ensure that they are on task.

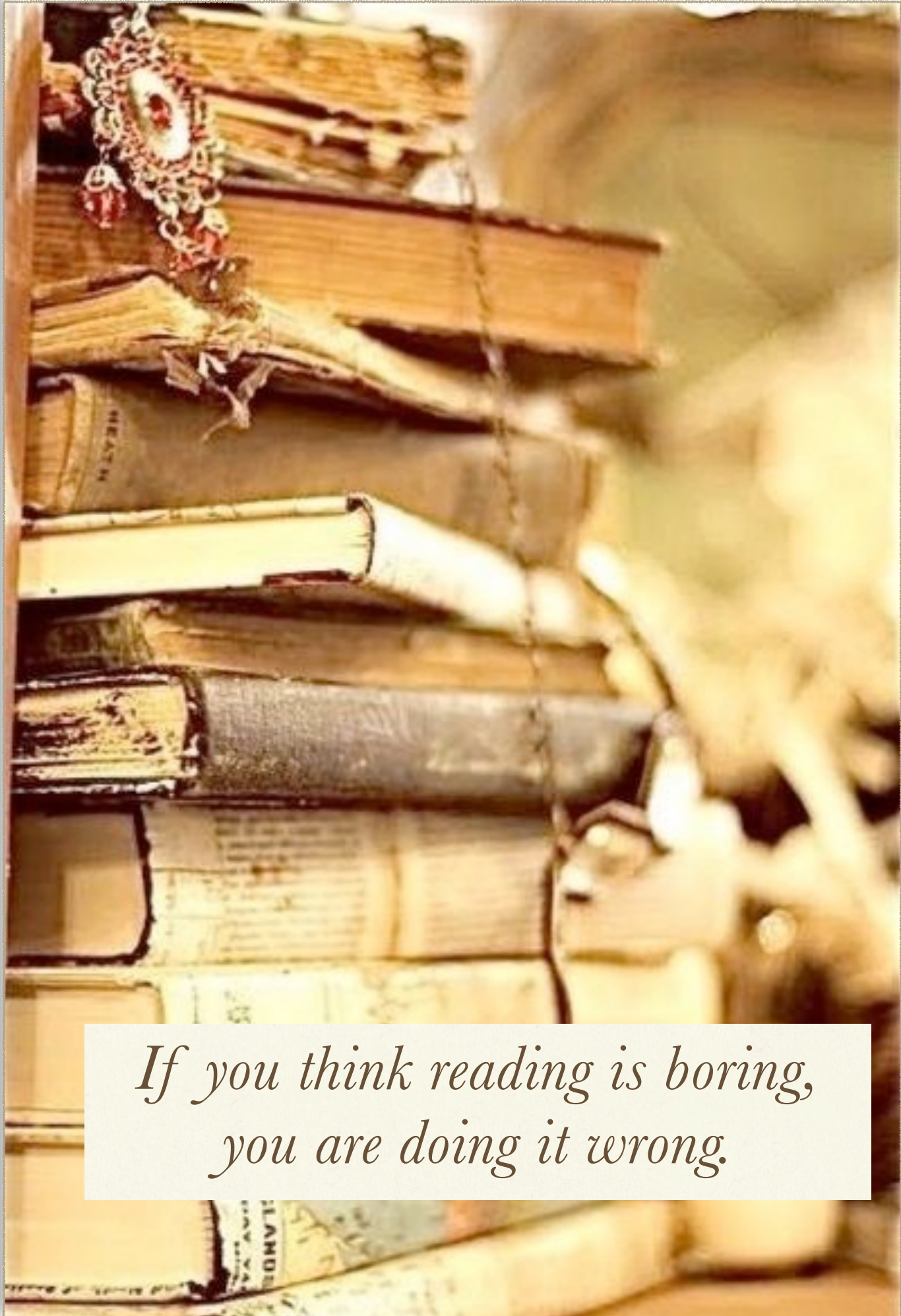
(Adapted from <http://www.geniushour.com/what-is-genius-hour/>)

Genius Hour at the L&N STEM Academy

At our school Genius Hour provides many different opportunities for students. They range anywhere from tutoring time with teachers; projects such as 3D printing, knitting, or environmental concerns; activities scheduled in World's Fair Park; and more. Each semester, students have the opportunity to express their three top choices for each of the three days we host Genius Hour times. Once selected, the administration looks over the list and approves choices before the schedule is released to students and teachers. Throughout the semester, teachers, administrators, or parents can request that students be moved into a tutoring environment until grades improve. Once those grades are at a C or better, the student is free to return to the activities of his or her choice.

Chapter 2

ENGLISH

A close-up photograph of a stack of old, worn books. The spines of the books are visible, showing various colors and textures, including leather and cloth. A decorative tassel or ornament is attached to the top of the stack. The background is blurred, suggesting a library or a collection of books.

*If you think reading is boring,
you are doing it wrong.*

Changes to English 1 Scheduling

The traditional scheduling methods for College Prep and Honors classes has been to put classes in the schedule as distinctly different sections with College Prep students grouped together and Honors students grouped separately. Once students were placed, there has been little possibility of changing that status.

While not an inherently bad way to schedule, at the L&N STEM Academy we feel we can do better by our students. This year we are piloting a new way of scheduling College Prep and Honors classes.

We will schedule every student into heterogenous sections of English 1 College Prep regardless of previous student test scores or middle school teacher recommendations.

Throughout the fall semester, every student will have the opportunity to complete supplementary assignments with Honors level expectations. These application assignments will not show up as grades in Aspen. Rather, they will be a representative sample of student work to let our English department judge a student's proficiency for completing Honors level work.

At the end of the first semester, with teacher approval, students who have applied for Honors credit through the supplementary assignments will be given reading and writing assignments to be completed outside of regular class hours to earn Honors credit. These assignments will be graded and placed in Aspen to qualify that student for the extra 3 points added to the final GPA in an Honors level class.

Students who earn Honors standing will continue to work alongside students working toward a College Prep credit. By rethinking the traditional scheduling methods, we feel the quality of work will improve for every student.

English 1 College Prep

9th Grade

Traditional For students who are functioning on grade level or above in Language Arts and Reading. The curriculum includes a study of grammar and language, study skills, library skills, composition, literature, and vocabulary development. *Summer reading is required.*

English 1 Honors

9th Grade

Traditional. For students who are functioning above grade level in Languages Arts and Reading and have demonstrated competency in grammar and composition skills in the 8th grade. Students must have motivation and desire to participate in this program. English 1 Honors includes in-depth study in composition, research and literary analysis, and it requires advanced study techniques and outside readings. *Summer reading is required.*

English 2 College Prep

10th Grade

Traditional. For students who have successfully demonstrated an average or above average ability to perform on-grade-level language, analytical, composition, and reading skills. The curriculum includes further development in literary analysis, vocabulary development, and composition.

English 2 Honors

10th Grade

Traditional. For students who have demonstrated a mastery of grammar, writing, and reading skills in the English 1 standard College Prep or Honors level. The curriculum is an in-depth study of critical thinking and analytical skills and includes the development of composition, literary analysis, research, and speaking skills. Summer reading is required. This course is preparation for success in the Advanced Placement curriculum at the 11-12 grades.

English 3 College Prep

11th Grade

Traditional. This course is for students who have successfully demonstrated an average or above average ability to perform on-grade-level language, analytical, composition, and reading skills. The literature component focuses on a survey of British/World Literature with continued development of literary analysis skills. In combination with U.S. History, this course will explore the cross curricular connections between history and literature. The course also emphasizes study of rhetorical appeals in real-world argumentative writing. The curriculum includes further development of analytical, composition, and research skills in preparation for college English.

English 3 College Prep Blended

11th Grade

Blended. The course also emphasizes study of rhetorical appeals in real-world argumentative writing through a survey of American literature. This course is designed for students who are functioning above grade level in Languages Arts and Reading and have demonstrated competency in self-paced, digital, and online environments. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* The curriculum includes further development of analytical, composition, and research skills in preparation for college English. **(Prerequisites: Teacher recommendation, GPA of 2.5 or higher)**

AP Combined Studies

11th Grade

Traditional. Upon completion of Honors English 2, AP Government, or demonstrated competency of rhetorical skills, students will focus on thinking and writing at the college level. The course is designed to develop students' abilities to think conceptually about U.S. History from approximately 1491 to the present and apply historical thinking skills as they learn about the past. Seven themes of equal importance---identity; peopling; politics and power; work, exchange, and technology; America in the world; environment and geography; and ideas, beliefs, and culture---provide the framework for research, writing, and discussion. *A college level course, students will be prepared to take both the AP Language and Composition and AP U.S. History exams in May of their junior year. AP Combined Studies satisfies both the English 3 credit and Social Studies credit. Summer assignments are required.* **(Prerequisite: Teacher recommendation)**

AP Language & Composition Blended

11th Grade

Blended. Upon completion of Honors English 2, AP Government or demonstrated competency of rhetorical skills, students will focus on thinking and writing at the college level. This course is designed for students who are functioning well above grade level in Languages Arts and Reading and have demonstrated competency in self-paced, digital, and online environments. Students must have motivation and desire to participate in this program. The curriculum includes further development of analytical, composition, and research skills at the level of a college freshman. Students will be prepared to take the AP Language and Composition exam in May of their junior year. *Students and parents must attend a Blended Orientation to participate.* Summer assignments are required. **(Prerequisite: Teacher recommendation)**

English 4 College Credit (Dual Enrollment)

12th Grade

Traditional. A Senior English course for college credit. The curriculum is a composition and literary study equivalent to English Composition I on the college level. The course includes analysis of reading materials through formal compositions and tests. Students may receive Senior English credit and 3 hours of college credit. **(Prerequisite: Students must meet entrance requirements of the cooperating institution of higher education)**

AP Literature and Composition

12th Grade

Traditional. A course for students who have successfully completed AP English 3 or demonstrated competency in literary analysis skills. Students must be highly motivated and have above-average writing and analytical skills. The curriculum is an in-depth study of American, British, and World Literature with expectations commensurate with the first year of college English. Outside readings are required. The course is designed to help develop the cognitive and communicative skills necessary to do well on the AP English Literature and Composition Test. **(Prerequisite: Teacher recommendation)**

English 4 College Prep

12th Grade

Traditional. This course is for students who have successfully demonstrated an average or above-average ability to perform on-grade-level language, analytical, composition and reading skills. The literature component focuses on a survey of British/World Literature with continued development of literary analysis skills. The course also emphasizes study of rhetorical appeals in real-world argumentative writing. The curriculum includes further development of analytical, composition, and research skills in preparation for college English.

English 4 College Prep Blended

12th Grade

Blended. This course is for students who have successfully demonstrated an average or above-average ability to perform on-grade-level language, analytical, composition, and reading skills. The literature component focuses on a survey of British/World Literature with continued development of literary analysis skills. The course also emphasizes study of rhetorical appeals in real-world argumentative writing. This course is designed for students who are functioning above grade level in Languages Arts and Reading and have demonstrated competency in self-paced, digital, and online environments. Students must have motivation and desire to participate in this program. *Students and parents must attend a Blended Orientation to participate.* The curriculum includes further development of analytical, composition, and research skills in preparation for college English. (**Prerequisite: Teacher recommendation**)

Journalism 1

9th to 12th Grade

A one-unit course for students who are proficient in writing skills and have an interest in the production of publications. Curriculum includes the history and elements of journalistic style and the application of journalistic techniques to the development of a publication. Students who wish to take this course must be highly motivated, work well with peers, and be responsible in following through with assignments as the work culminates in a publication. (Elective credit.) (Prerequisites: Students may have to demonstrate ability to write well; may be required to apply for this course; and may be required to receive teacher recommendation.) Publications include the newspaper and/or the annual.)

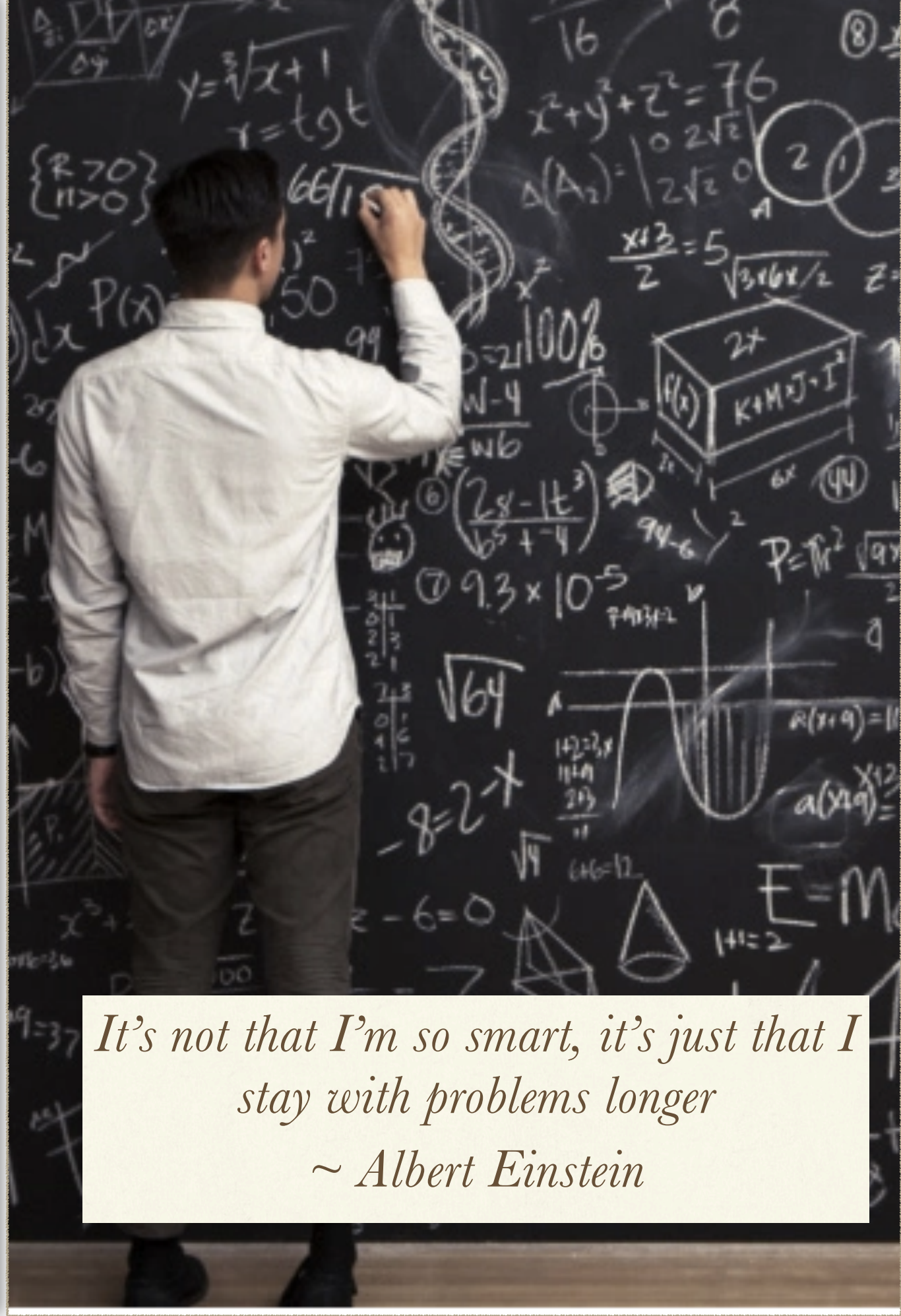
Yearbook

10th to 12th Grade

For students interested in Print Journalism, photography, and graphic design. Must demonstrate abilities to work within schedules and timelines, work collaboratively, and may be expected to attend events before and after school. Final project is the successful completion of the school Yearbook. (**Prerequisites: Students may have to demonstrate ability to write well; may be required to apply for this course; and may be required to receive an English teacher recommendation**)

Chapter 3

MATH



It's not that I'm so smart, it's just that I stay with problems longer

~ Albert Einstein

Piloting Integrated Math

Beginning in the 2017-18 academic year, we will discontinue placing students into Algebra 1 CP and Algebra 1 Honors classes. Instead, we are part of a pilot program in Knox County Schools placing students into Integrated Math 1.

We feel this change specifically fits the culture of the L&N STEM Academy. Math is an overlapping discipline. It doesn't follow discrete guidelines of Algebra 1 versus Geometry versus Algebra 2 and so on. Rather, each discipline overlaps into others, and we feel it should be taught this way at our school.

This model also fits our Science course models very well. At the L&N STEM Academy, we offer an inverted science curriculum. Where most schools begin science with Biology, we hold Biology until later in our science offerings.

The reason for this is simple. Most students do not have the requisite math background to be successful in Biology as early as 9th grade. By integrating our math curriculum, we will expose students to more elements of math earlier in the academic track thus better preparing them for the inverted science curriculum.

Students who have already taken Algebra 1 in 8th grade will still go into Geometry for this year. This change only impacts those students who would normally be placed in an Algebra 1 CP or Algebra 1 Honors course.

Integrated Math 1 College Prep

9th Grade

Traditional. This course is the first of three courses in a series that uses a more integrated approach to cover the same algebra and geometry concepts and skills that are included in the traditional three course series. The problem situations, models, and technology used will foster connections among the various strands of mathematics and develop concepts from multiple perspectives.

Integrated Math 1 Honors

9th Grade

Traditional. This course is the first of three courses in a series that uses a more integrated approach to cover the same algebra and geometry concepts and skills that are included in the traditional three course series. The problem situations, models, and technology used will foster connections among the various strands of mathematics and develop concepts from multiple perspectives. The honors course is taught more in depth and at a faster pace than the Integrated I course. Some Integrated I and II concepts will be introduced.

Geometry College Prep

10th Grade

Traditional. This course is an introductory survey of plane geometry, three-dimensional geometry, coordinate geometry, and transformational geometry. The curriculum develops the vocabulary and reasoning skills students need to formulate algebraic and geometric proofs using an axiomatic system. The course also develops algebraic skills begun in Algebra 1 in preparation for further work in Algebra 2. Applied problems help students to understand how math is used in diverse careers. Successful completion of this course prepares a student for further work in Algebra 2 (**Prerequisite: Algebra 1 or Departmental recommendation**)

Geometry Honors

9th and 10th Grade

Traditional. Topics found in College Preparatory Geometry are covered in greater depth with emphasis placed on problem solving, writing skills (especially in writing proofs) and algebraic applications. Additional enrichment objectives are covered as time permits. Successful completion of this course prepares a student for further work in Algebra, usually Algebra 2 Honors. **(Prerequisites: Algebra 1 in the 8th grade or Algebra 1 Honors in the 9th grade and Departmental recommendation)**

Algebra 2 College Prep

10th and 11th Grade

Traditional. Algebra 2 involves the study of functions and an extension of the concepts of Algebra 1 and Geometry. Topics covered are: quadratic equations and functions; systems of equations and inequalities; polynomials and rational polynomial expressions; polynomial functions; conic sections; exponential and logarithmic functions; and probability and statistics. Satisfactory completion of this course prepares students for entry into Pre-Calculus or Advanced Algebra and Trigonometry. **(Prerequisites: Algebra 1 and Geometry)**

Algebra 2 Honors

10th and 11th Grade

Traditional. This course provides a rigorous preparation for Honors Pre-Calculus. An emphasis is placed on algebraic proof and provides an enriched version of Algebra 2 through the study of additional objectives and topics. Successful completion of this course prepares students for entry into Pre-Calculus or Honors Pre-Calculus. **(Prerequisites: Algebra 1 and Geometry Honors with grades of at least a “B” or Departmental recommendation)**

Algebra 2 Honors Blended

10th and 11th Grade

Traditional. This course provides a rigorous preparation for Honors Pre-Calculus. An emphasis is placed on algebraic proof and provides an enriched version of Algebra 2 through the study of additional objectives and topics. Successful completion of this course prepares students for entry into Pre-Calculus or Honors Pre-Calculus. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* **(Prerequisites: Algebra 1 and Geometry Honors with grades of at least a “B” or Departmental recommendation)**

Pre-Calculus College Prep

11th and 12th Grade

Traditional. Pre-Calculus develops the topics essential for success in Calculus. Content includes a study of algebraic, transcendental, and trigonometric functions, as well as their compositions and inverses, vectors, polar graphing, complex numbers, conic sections, and sequences and series. Students who complete this course successfully will have a strong background for a first year Calculus sequence. **(Prerequisites: Algebra 1, Geometry, and Algebra 2 with “A/B” average recommended)**

Pre-Calculus Honors

11th and 12th Grade

Traditional. The faster pace of this course provides the time to enrich the content of Pre-Calculus through the study of additional objectives and topics. Successful completion of this course provides the student with the necessary prerequisites for Advanced Placement Calculus. **(Prerequisites: Geometry Honors and Algebra 2 Honors with A/B average recommended)**

Statistics College Prep

11th and 12th Grade

NEW. Traditional. This course is non-calculus in its orientation and designed to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. The major themes in Statistics include: interpreting categorical and quantitative data, conditional probability and other rules of probability, using probability to make decisions, and making inferences and justifying conclusions. College-Prep Statistics is intended for students interested in business, social sciences, education, and data analysis. (**Prerequisite: Algebra 2**)

AP Statistics

11th and 12th Grade

Traditional. This course is non-Calculus in its orientation with a major focus on data analysis. Students who study this course will be prepared to take the AP Statistics Exam and seek college credit. This course follows the topics listed in the College Board Advanced Placement course description. (**Prerequisites: College Prep English or higher, Algebra 2 with a grade of C recommended, and Departmental recommendation**)

Applied Mathematics College Prep

12th Grade

NEW. Traditional. This course is a 4th year senior level math course that will focus on the big ideas of advanced mathematics. This course is designed to prepare students for both college and the workplace. It is intended for students interested in careers that use applied mathematics such as banking, industry, or human resources

AP Computer Science

11th and 12th Grade

Traditional. This course emphasizes object-oriented programming methodology with an emphasis on problem solving and algorithm development and is meant to be the equivalent of a first-semester course in computer science. It also includes the study of data structures and abstraction. The scope and sequence of this course follows the topics listed in the College Board Advanced Placement course description. Students who study this course will be prepared to take the Advanced Placement Computer Science “A” Exam and seek college credit. *A new element of the 2016 course is that it will include a service-learning component with out-of-class programming requirements. Our school has the distinction of being one of the few high schools nationwide offering the service learning version of this course.* (**Prerequisite: Math or Science teacher approval**)

AP Computer Principles

11th and 12th Grade

Traditional. This is a second AP programming course. The L&N STEM Academy is one of the few high schools nationwide offering this course. This is equivalent to a college first-semester introductory computer engineering course. The course will be design-project-based, with students preparing group and individual portfolios. Students will acquire skills in the Swift programming language and will use it to create computational artifacts to be used in several school courses. Design teams will be collaborative and involve technical writing, programming, and system design. *Summer reading is required.* Prior programming skill is not required but will be an advantage. (**Prerequisites: Algebra 1, Geometry, and teacher approval**)

AP Calculus AB**11th and 12th Grade**

Traditional. Devoted mainly to the topics in Differential and Integral Calculus, students who study this course will be prepared to take the AP Calculus Exam and seek college credit. The scope of this course follows the topics listed in the College Board Advanced Placement Mathematics Course Description. (**Prerequisites: Honors Pre-Calculus and Departmental recommendation**)

AP Calculus BC**11th and 12th Grade**

Traditional. This course is an extension of all the topics covered in AP Calculus AB and includes additional topics. Students who study this course will be prepared to take the Advanced Placement BC Calculus Exam and seek college credit. The scope of this course follows the topics listed in the College Board Advanced Placement Course Description. (**Prerequisite: AP Calculus AB and Departmental recommendation**)

Chapter 4

SCIENCE



*Somewhere, something incredible
is waiting to be known.*

Atmospheric, Earth, and Planetary Science

New for the 2017-2018 academic year, we are replacing the entry-level Physical World Concepts classes with a newly developed Atmospheric, Earth, and Planetary Science course. We feel this change will better align with our Science and Math course models, culture, and student needs at the L&N STEM Academy.

Students enrolled in the Atmospheric, Earth, and Planetary Science course will concurrently take Integrated Math 1 to better develop the requisite math background and problem-solving skills needed for optimum success with subsequent coursework in chemistry, biology, and physics.

The curriculum challenges freshmen-level students in developing an understanding of concepts and connections between physical, chemical, and biological processes involved in the geosciences. Topics covered include Earth's internal structure/composition, rocks and minerals, the rock cycle and weathering processes, resources, energy, sedimentology/stratigraphy principles, age-dating techniques, the fossil record and geologic time, plate tectonics, surface and groundwater, weather patterns, meteorology/forecasting, severe storms, climate, star formation, planetary dynamics, remote sensing applications, history of Mars, and current events/applications in planetary science.

Students who have already taken Physical Science in 8th grade and score above cutoff on placement assessment will take Chemistry for their freshman year. This change only impacts those students who would have traditionally been placed in Physical World Concepts (CP/H).

Atmospheric, Earth, and Planetary Science College Prep

9th Grade

NEW. Traditional. This course is designed to challenge freshmen-level students in developing an understanding of concepts and connections between physical, chemical, and biological processes involved in the geosciences. The major units covered include Atmospheric science and meteorology, Earth, and Planetary Science. Topics covered include internal structure/composition, rocks and minerals, the rock cycle and weathering processes, resources, energy, sedimentology/stratigraphy principles, age-dating techniques, the fossil record and geologic time, plate tectonics, surface and groundwater, weather patterns, forecasting, severe storms, climate, star formation, planetary dynamics, remote sensing applications, history of Mars, and current events/applications in planetary science.

Atmospheric, Earth, and Planetary Science Honors

9th Grade

NEW. Traditional. This course is designed to challenge freshmen-level students in developing an understanding of concepts and connections between physical, chemical, and biological processes involved in the geosciences. The major units covered include Atmospheric science and meteorology, Earth, and Planetary Science. Topics covered include internal structure/composition, rocks and minerals, the rock cycle and weathering processes, resources, energy, sedimentology/stratigraphy principles, age-dating techniques, the fossil record and geologic time, plate tectonics, surface and groundwater, weather patterns, forecasting, severe storms, climate, star formation, planetary dynamics, remote sensing applications, history of Mars, and current events/applications in planetary science. The honors level class will move a faster pace and cover the standards in more depth.

Chemistry 1 College Prep

10th Grade

Traditional. Chemistry 1 develops an understanding of the relevance of chemistry as it relates to standards of living, career choices, and current issues in science and technology. Course content includes laboratory techniques and safety, properties and structures of matter in its various states, chemical calculations and quantitative relationships, chemical bonding and molecular structure, chemical reactions, solutions, gas laws, and acids and bases. The ability to make mathematical computations using fractions, decimals, ratios and proportions, and exponents is required. (**Prerequisite: Algebra 1**)

Chemistry 1 Honors

9th and 10th Grade

Traditional. This course develops an understanding of the relevance of chemistry as it relates to standards of living, career choices, and current issues in science and technology. Course content includes laboratory techniques and safety, properties and structures of matter in its various states, chemical calculations and quantitative relationships, chemical bonding and molecular structure, chemical reactions, solutions, gas laws, and acids and bases. The ability to make mathematical computations using fractions, decimals, ratios and proportions, and exponents is required. Honors Chemistry is designed to meet the needs of the more academically able student and will include a basic study of nuclear principles and organic chemistry. (**Prerequisites: Algebra 1 with eligibility for Geometry**)

Chemistry 1 Honors Blended

10th Grade

NEW. Blended. Chemistry 1 develops an understanding of the relevance of chemistry as it relates to standards of living, career choices, and current issues in science and technology. Course content includes laboratory techniques and safety, properties and structures of matter in its various states, chemical calculations and quantitative relationships, chemical bonding and molecular structure, chemical reactions, solutions, gas laws, and acids and bases. The ability to make mathematical computations using fractions, decimals, ratios and proportions, and exponents is required. As a blended learning class, students will only meet with their instructor one day per week. The rest of the time will be independent and group study outside of class. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* (**Prerequisite: Algebra 1 and teacher and administrator approval**)

Biology 1 College Prep

11th Grade

Traditional. Biology I introduces students to the world of living things. The goal is to develop an understanding of the diversity and unity in life. Concepts covered include basic life processes at the molecular, cellular, systemic, organismal, and ecological levels; the interdependence and interactions within the environment; cultural and historical contributions of men and women of the sciences; evidence of biological evolution; and current and emerging technologies in the life sciences.

Biology 1 Honors

10th and 11th Grade

Traditional. This course develops an understanding of the diversity and unity in living things. Concepts covered include the interactions of organisms with their environment, chemical structures of organisms, transfer of energy of organisms, cell structure and function, continuity and change in living things, diversity of living things, and biology-related career opportunities. Honors Biology places increased emphasis on development of critical thinking skills. (**Prerequisite: Teacher recommendation**)

Biology 1 Honors Blended

10th and 11th Grade

NEW. Blended. This course develops an understanding of the diversity and unity in living things. Concepts covered include the interactions of organisms with their environment, chemical structures of organisms, transfer of energy of organisms, cell structure and function, continuity and change in living things, diversity of living things, and biology-related career opportunities. Honors Biology places increased emphasis on development of critical thinking skills. As a blended learning class, students will only meet with their instructor one day per week. The rest of the time will be independent and group study outside of class. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* Student selection is based upon a combination of standardized test scores, past performances in science, and teacher recommendations. (**Prerequisite: Teacher and administrator recommendation**)

Chemistry 2 Honors / AP Chemistry

11th to 12th Grade

(2 Credits) Traditional. Develops an understanding of the properties of matter and the interactions of matter and energy. The course includes a more in-depth study of topics introduced in Chemistry 1, such as atomic structure, quantum theory, organic chemistry, electrochemistry, kinetic molecular theory, stoichiometry, chemical equilibrium, and thermodynamics. Student selection is based on a combination of past performance in science and mathematics and teacher recommendation. The Advanced Placement curriculum is designed to prepare students to take the AP Chemistry test. Students may be required to attend additional classroom or laboratory sessions beyond the typical schedule. (**Prerequisites: Chemistry 1, Algebra 1 and 2, and teacher recommendation required. Current enrollment in Advanced Math or Calculus is strongly recommended**)

Biology 2 Honors / AP Biology

11th and 12th Grade

(2 Credits) Traditional. Biology 2 Honors offers an in-depth coverage of biology topics equivalent to the first semester of college cellular and molecular biology. This course is intended to be a pre-cursor or companion to AP Biology. Curriculum topics include biochemistry, cytology, genetics, animal physiology, plant physiology, and ecology. The Advanced Placement curriculum is designed to prepare students to take the AP Biology exam. The current syllabus includes the areas of molecular and cellular biology, genetics and evolution, and organismal and population biology. Students may be required to attend additional classroom or laboratory sessions beyond the typical schedule. (**Prerequisites: Biology 1, Chemistry, and teacher recommendation**)

Anatomy and Physiology

11th and 12th Grade

Traditional. This course is a study of the body's structures and respective functions at the molecular/biochemical, cellular, tissue, organ, systemic, and organismal levels. Students explore the body through laboratory investigations, models, diagrams, and/or comparative studies of the anatomy of other organisms. Content includes the study of the structure and function of cells, tissues, organs, and body systems.

(Prerequisite: Biology 1 is required. Chemistry 1 is recommended)

Microbiology

11th and 12th Grade

Traditional. This course examines the role of microbes in everyday life. Major topics covered include microbial cell biology, microbial genetics, microorganism's interactions in the environment, and the interactions and impact of microorganisms with humans. **(Prerequisites: Biology 1 and Chemistry 1)**

AP Environmental Science

10th to 12th Grade

Traditional. A first-year college level environmental science course, which follows the syllabus of the College Board's Advanced Placement Program. The AP Environmental Science course is designed to prepare students to take the College Board AP Environmental Science test given in May of each year. The goal of this 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 may be required to complete a summer assignment and/or attend additional classroom or laboratory sessions beyond the regularly scheduled classes.

(Prerequisites: Biology 1, Chemistry 1, and teacher recommendation)

Physics Honors

Traditional. The study of the relationships between matter and energy. Topics include force, motion, momentum, light, heat, energy, sound, electricity and magnetism, and atomic and nuclear physics. The honors course is designed to meet the needs of the more academically able student. Honors level is based upon a combination of standardized test scores, past performance in science and math, teacher recommendations, and established enrollment limits. Current placement in Advanced Math or Calculus is recommended). **(Prerequisite: Algebra 1, Corequisite Algebra 2. Chemistry and Biology recommended.)**

AP Physics 1

11th and 12th Grade

Traditional. This is equivalent to a first semester in college in algebra based physics. This course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy and power; and mechanical waves and sound. It also introduces electric circuits.

(Prerequisites: Geometry, currently taking Algebra 2 or equivalent course, and teacher recommendation)

AP Physics C (Calculus Based) (Mechanics)

12th Grade

Traditional. A first year, Calculus-based college level Physics course that has been audited and approved by the College Board's Advanced Placement Program. This course is equivalent to a semester-long, calculus-based college course in classical Mechanics that includes a strong laboratory component. The Physics C course requires a more advanced knowledge of mathematics than the Physics B course. Topics covered include 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. Students may be required to complete a summer assignment and/or attend additional classroom or laboratory sessions beyond the regularly scheduled classes. **(Prerequisites: Algebra 1 and 2, Geometry, and Chemistry, along with current enrollment in Calculus as well as Department approval)**

Geology College Prep

10th to 12th Grade

Traditional. This course explores the origins and connections between the physical, chemical, and biological processes of the earth system. The student will investigate maps, matter, and minerals, the rock cycle, geologic history, oceanography, hydrologic cycle, geologic hazards, and plate tectonics. Geology focuses on the physical aspects of the earth process and cycles. Tennessee geologic features will also be a part of this study. **(Prerequisites: Chemistry 1 Co- or Prerequisite Biology 1)**

Introduction to Organic / Biochemistry College Prep

11th and 12th Grade

Traditional. This is a high-school-level survey of topics in Organic and Biochemistry. Topics will include organic compounds, reactions, nomenclature and the types, structure, and function of biological molecules and processes. This will be a rigorous class on par with an honors level class. **(Prerequisite: Chemistry 1 and Biology 1, and teacher recommendation)**

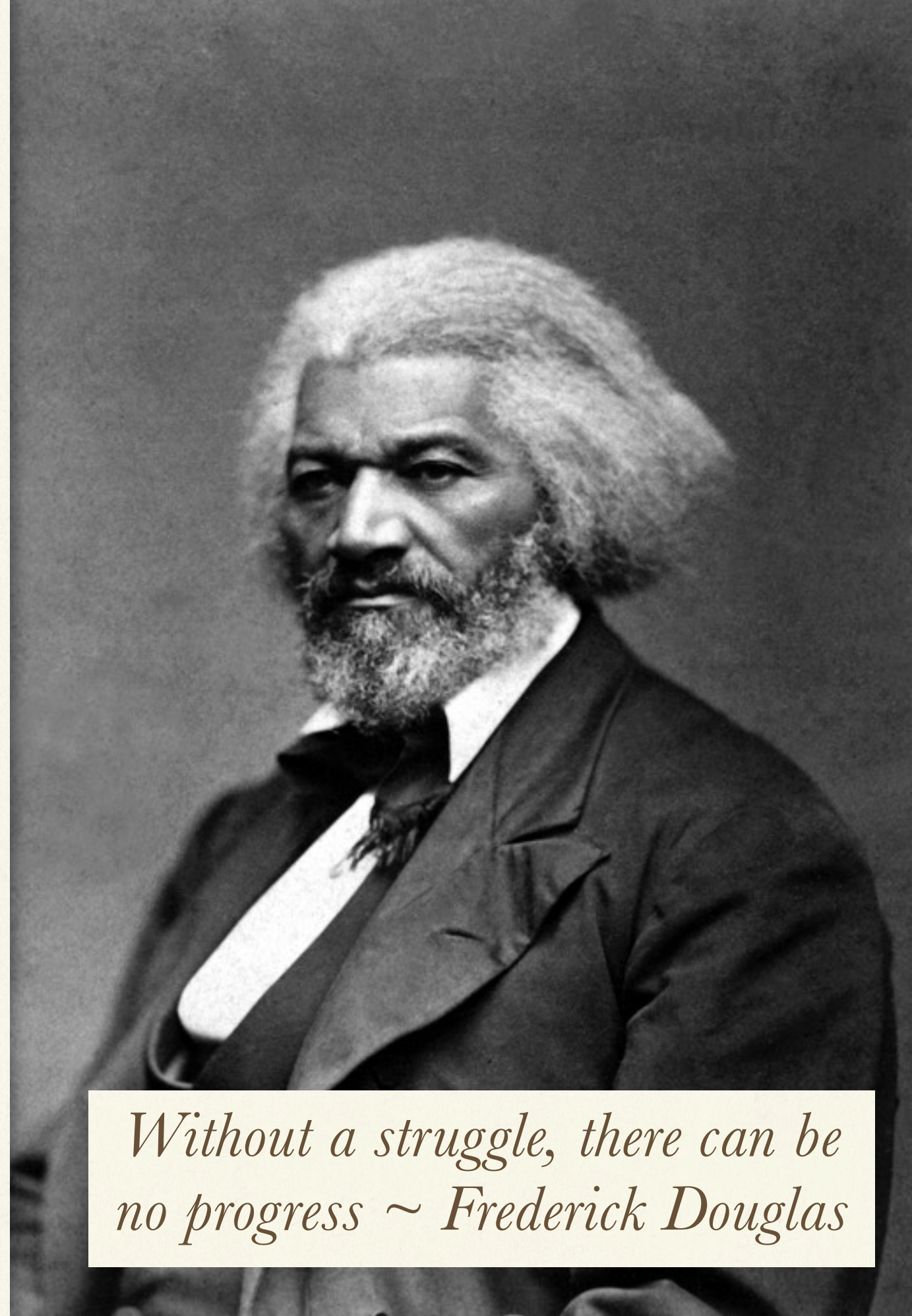
Organic / Biochemistry Honors

11th and 12th Grade

Traditional. Honors Organic and Biochemistry will cover the essentials of Organic Chemistry, including nomenclature, basic reactions and simple synthesis. In depth treatment of Biological molecules and processes will make up the biochemistry section of the course. This is an honors level course, the high school equivalent of a sophomore level college class, with very intensive requirements. **(Prerequisites: Biology I, Chemistry I, teacher recommendation, preference given to students who have completed AP Chemistry or AP Biology)**

Chapter 5

SOCIAL
STUDIES



*Without a struggle, there can be
no progress ~ Frederick Douglass*

World History and Geography
College Prep

9th Grade

Traditional. Students will study the rise of the nation state in Europe, the French Revolution, and the economic and political roots of the modern world. They will examine the origins and consequences of the Industrial Revolution, 19th Century political reform in Western Europe, and imperialism in Africa, Asia, and South America. They will explain the causes and consequences of the great military and economic events of the past century, including the World Wars, the Great Depression, the Cold War, and the Russian and Chinese Revolutions. Finally, students will study the rise of nationalism and the continuing persistence of political, ethnic, and religious conflict in many parts of the world. Relevant Tennessee connections will be part of the curriculum, as well as appropriate primary source documents. Students will explore geographic influences on history, with attention given to political boundaries that developed with the evolution of nations from 1750 to the present and the subsequent human geographic issues that dominate the global community. Additionally, students will study aspects of technical geography such as GPS and GIS, and how these innovations continuously impact geopolitics in the contemporary world.

World History and Geography
Honors

9th Grade

Traditional. Students will study the rise of the nation state in Europe, the French Revolution, and the economic and political roots of the modern world. They will examine the origins and consequences of the Industrial Revolution, 19th Century political reform in Western Europe, and imperialism in Africa, Asia, and South America. They will explain the causes and consequences of the great military and economic events of the past century, including the World Wars, the Great Depression, the Cold War, and the Russian and Chinese Revolutions. Finally, students will study the rise of nationalism and the continuing persistence of political, ethnic, and religious conflict in many parts of the world. Relevant Tennessee connections will be part of the curriculum, as well as appropriate primary source documents. Students will explore geographic influences on history, with attention given to political boundaries that developed with the evolution of nations from 1750 to the present and the subsequent human geographic issues that dominate the global community. Additionally, students will study aspects of technical geography such as GPS and GIS, and how these innovations continuously impact geopolitics in the contemporary world. *This course requires in-depth reading and analysis and a work-load well beyond that of CP World History.*

AP Human Geography**9th Grade**

Traditional. The AP Human Geography course is equivalent to an introductory college level course in human geography. The course introduces students to the systematic study of patterns and processes that have shaped human understanding, use, and alteration of the Earth’s surface. Students employ spatial concepts and landscape analysis to examine socioeconomic organization and its environmental consequences. They also learn about the methods and tools geographers use in their research and applications. The curriculum reflects the goals of the National Geography Standards (2012). ***Replaces World History and Geography Credit.*** (Prerequisite: Teacher recommendation)

US Government and Civics and Contemporary Issues College Prep**10th Grade**

Traditional. Students will study the purposes, principles, and practices of American government as established by the Constitution. Students are expected to understand their rights and responsibilities as citizens and how to exercise these rights and responsibilities in local, state, and national government. Students will learn the structure and processes of the government of the state of Tennessee and various local governments. The reading of primary source documents is a key feature of United States Government and Civics standards. Students will use inquiry skills to examine the issues that impact the contemporary world. Included in the course will be analysis of the historical, cultural, economic, and geographic factors that have raised certain issues to levels of concern in our nation and around the globe. Students will engage in research and problem solving in order to better understand and assess significant current issues.

AP US Government and Politics**10th Grade**

Traditional. AP United States Government and Politics introduces students to key political ideas, institutions, policies, interactions, roles, and behaviors that characterize the political culture of the United States. The course examines politically significant concepts and themes, through which students learn to apply disciplinary reasoning, assess causes and consequences of political events, and interpret data to develop evidence-based arguments. (Prerequisite: Teacher recommendation)

US History and Geography
College Prep

11th Grade

Traditional. Students will examine the causes and consequences of the Industrial Revolution and America’s growing role in world diplomatic relations, including the Spanish- American War and World War I. Students will study the goals and accomplishments of the Progressive movement and the New Deal. Students will also learn about the various factors that led to America’s entry into World War II as well as its consequences for American life. Students will explore the causes and course of the Cold War. Students will study the important social, cultural, economic, and political changes resulting from the Civil Rights Movement, the Cold War, and recent events and trends that have shaped modern-day America. Additionally, students will learn the causes and consequences of contemporary issues impacting their world today. Students will continue to use skills for historical and geographical analysis as they examine American history since Reconstruction with special attention to Tennessee connections in history, geography, politics, and people. Students will continue to learn fundamental concepts in civics, economics, and geography within the context of United States history. The reading of primary source documents is a key feature of United States history standards. Finally, students will focus on current human and physical geographic issues important in contemporary America and the global society.

AP US History Combined Studies

11th Grade

Traditional. AP US History focuses on developing students’ abilities to think conceptually about U.S. history from approximately 1491 to the present and apply historical thinking skills as they learn about the past. Seven themes of equal importance — identity; peopling; politics and power; work, exchange, and technology; America in the world; environment and geography; and ideas, beliefs, and culture — provide areas of historical inquiry for investigation throughout the course. These require students to reason historically about continuity and change over time and make comparisons among various historical developments in different times and places. A college level course, students will be prepared to take both the AP Language and Composition and AP U.S. History exams in May of their junior year. AP Combined Studies satisfies both the English 3 credit and Social Studies credit. Summer assignments are required. *This course is only offered in combination with AP Language and Composition.* (**Prerequisite: Teacher recommendation**)

Economics College Prep

12th Grade

(1/2 credit) Traditional. Students will examine the allocation of scarce resources and the economic reasoning used by government agencies and by people as consumers, producers, savers, investors, workers, and voters. Key elements of the course include the study of scarcity, supply and demand, market structures, the role of government, national income determination, money and the role of financial institutions, economic stabilization, and trade. *Taken with Personal Finance.*

Personal Finance College Prep**12th Grade**

(1/2 credit) Traditional. Personal Finance is a course designed to inform students how individual choices directly influence occupational goals and future earnings potential. Real world topics covered will include income, money management, spending and credit, as well as saving and investing. *Taken with Economics.*

Economics College Prep Blended**12th Grade**

(1/2 Credit) Blended. Students will examine the allocation of scarce resources and the economic reasoning used by government agencies and by people as consumers, producers, savers, investors, workers, and voters. Key elements of the course include the study of scarcity, supply and demand, market structures, the role of government, national income determination, money and the role of financial institutions, economic stabilization, and trade. Taken with Personal Finance Blended. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* **(Prerequisite: Teacher Recommendation)**

Personal Finance College Prep Blended**12th Grade**

(1/2 credit) Blended. Personal Finance is a course designed to inform students how individual choices directly influence occupational goals and future earnings potential. Real world topics covered will include income, money management, spending and credit, as well as saving and investing. Taken with Economics Blended. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* **(Prerequisite: Teacher Recommendation)**

AP Human Geography**10th to 12th Grade**

Traditional. The AP Human Geography course is equivalent to an introductory college level course in human geography. The course introduces students to the systematic study of patterns and processes that have shaped human understanding, use, and alteration of the Earth's surface. Students employ spatial concepts and landscape analysis to examine socioeconomic organization and its environmental consequences. They also learn about the methods and tools geographers use in their research and applications. The curriculum reflects the goals of the National Geography Standards (2012). ***Taken in grades 10-12, this course serves as an elective credit only.*** **(Prerequisite: Teacher recommendation)**

AP European History**10th to 12th Grade**

Traditional. The study of European history since 1450 introduces students to cultural, economic, political, and social developments that played a fundamental role in shaping the world in which they live. Without this knowledge, we would lack the context for understanding the development of contemporary institutions, the role of continuity and change in present day society and politics, and the evolution of current forms of artistic expression and intellectual discourse. In addition to providing a basic narrative of events and movements, the goals of AP European History are to develop (a) an understanding of some of the principle themes in modern European history, (b) an ability to analyze historical evidence and historical interpretation, and (c) an ability to express historical understanding in writing. **(Prerequisite: Teacher recommendation)**

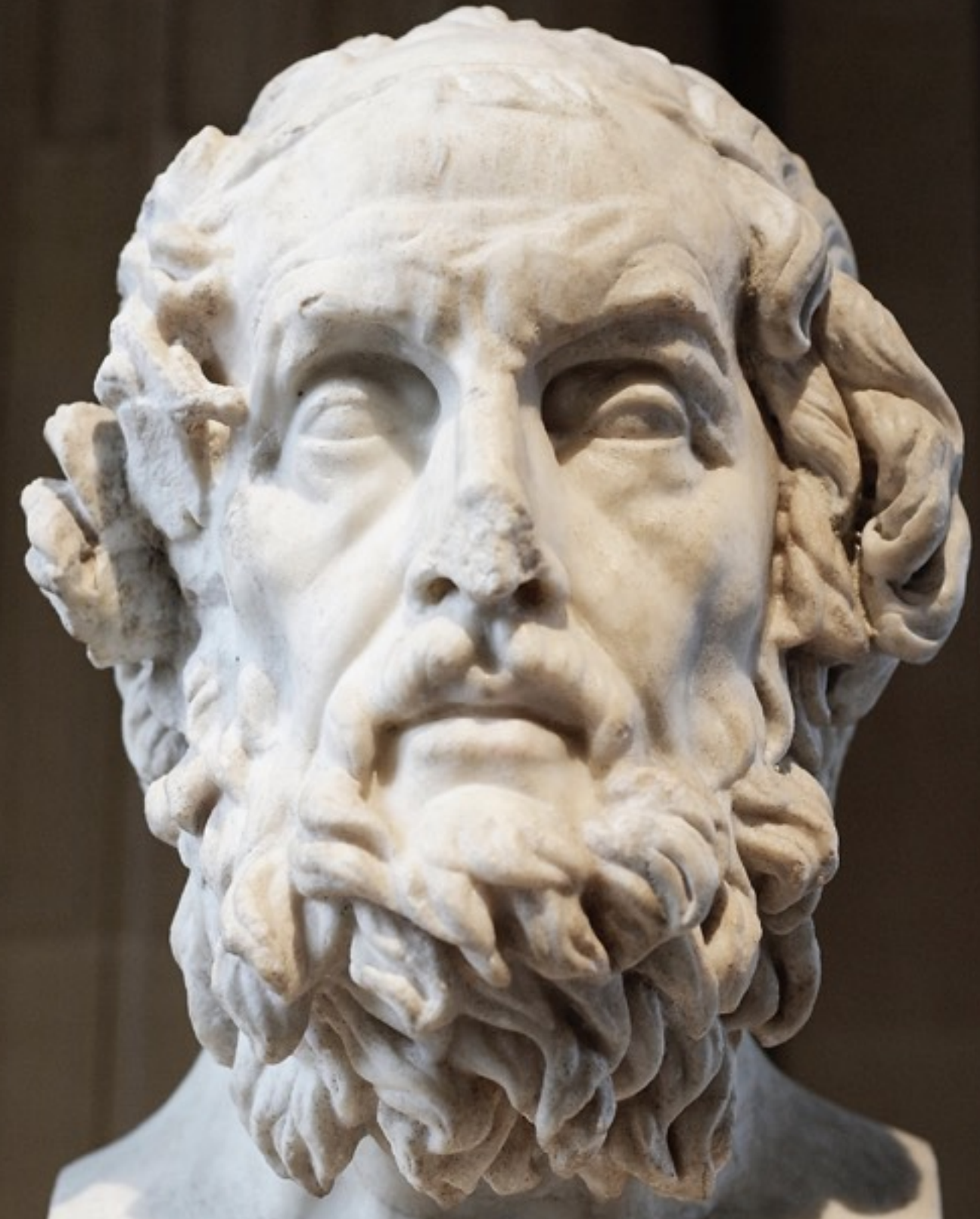
AP Psychology

11th and 12th Grade

Traditional. The content of this college-level course in psychology prepares students for the AP Psychology exam that falls under the auspices of the College Board and the Advanced Placement Program. AP Psychology, although offered at the high-school level, affords college-level instruction and demands advanced-learner productivity (reading, homework, and research). Participants will explore the behavioral and mental processes of animals and humans, and they will be exposed to the psychological facts, principles, and phenomena associated with each of the major subfields of psychology. Participants will also study ethics and methods used by psychologists in their science and practice. Perhaps most importantly, participants will learn more about themselves and those around them. Put simply, this course will help answer the question, “Why do people do the things they do?” (**Prerequisite: Teacher recommendation**)

Chapter 6

WORLD LANGUAGES



Carpe Scientiam

Etymology Mythology

9th Grade

Traditional. A one-unit course for students in 9th grade enrolled in English 9 CP, the curriculum includes a study of etymology, vocabulary development, classical mythology, and allusions found in literature, music, and the arts. This course lays a foundation for Latin 1. This course does NOT qualify as a foreign language credit for graduation.

Latin 1

9th & 10th Grade

Traditional. For students who are interested in acquiring knowledge of the Roman language and culture, the curriculum includes the development of vocabulary, grammar, translation skills, knowledge of English derivatives, and the study of the historical and cultural values of Rome and its continuing contributions to western civilization. This course is for 9th grade students currently enrolled in English 9 Honors and any students in grades 10-12. This is a required course for graduation from the L&N STEM Academy.

Latin 2 College Prep

10th & 11th Grade

Blended. For students who are interested in more deeply developing the skills learned in the first level, the Latin II curriculum includes further study of Latin grammar, vocabulary, and the history and culture of the Romans. Students who have successfully completed Level 1, or who have demonstrated proficiency as determined through a language proficiency test or through teacher recommendations, are eligible to take this course. Recommended for students in grades 10-11. This course is a self-paced, blended learning environment where students are free to work at their own pace, but still have traditional instruction from the teacher when necessary. This is a required course for graduation from the L&N STEM Academy.

Latin 2 Honors

10th & 11th Grade

Facilitated Virtual. For students who are interested in more deeply developing the skills learned in the first level, the Latin II curriculum includes further study of Latin grammar, vocabulary, and the history and culture of the Romans. Students who have successfully completed Level 1, or who have demonstrated proficiency as determined through a language proficiency test or through teacher recommendations, are eligible to take this course. Recommended for students in grades 10-11. Honors student work independently at their own pace in or outside of class. This is a required course for graduation from the L&N STEM Academy.

Latin 3 Honors

11th & 12th Grades

Facilitated Virtual. For students who are interested in further developing and employing the skills learned in the first and second levels, the curriculum includes reading and translating the works of famous Roman authors such as Julius Caesar, Cicero, Pliny, Vergil, Ovid, and others. Level 3 is recommended for college-bound students who plan to take university placement tests in Latin. Level 3 students work independently and primarily online. The teacher is available for tutoring or discussion as needed. (**Prerequisite: Latin 2 or Teacher recommendation**)

Latin 4 Honors

11th & 12th Grades

Facilitated Virtual. For students who have completed previous levels of Latin and are motivated to move beyond the standard Latin curriculum. The curriculum includes translating and analyzing in more detail the works of Cicero, Horace, Catullus, Ovid, and Vergil. Students who take this course must be willing and able to work independently. The purchase of a workbook or other supplementary texts may be required. (**Prerequisite: Latin 3 Honors or Teacher recommendation**)

AP Latin Vergil and Caesar

11th & 12th Grades

Facilitated Virtual. This course is an intensive language study in preparation for the Advanced Placement examination in Latin. The class includes reading and translating portions of Vergil's *Aeneid* and Caesar's *De Bello Gallico*. An overview of Roman literature, history, and culture is also a focus, along with identifying poetical and rhetorical devices and analyzing and writing about literature. Scoring at a certain level on the AP Exam may allow a student to use this course for college credit. At UTK a score on the AP Exam of 3 or better will allow the student to gain credit for Latin 111 and Latin 112, the first year of Latin. This will allow the student to fulfill his/her language requirement and will result in considerable cost savings at college. **(Prerequisite: Teacher Recommendation)**

Mandarin Chinese I

9th to 12th Grades

Traditional. For students who are interested in acquiring knowledge of the culture and language. The curriculum includes the study of the culture and basic conversational Chinese. Emphasis will be on developing elements of basic conversational Chinese. Recommended for 9th grade students who are taking English 1 Honors, and for any students in grades 10-12 who need to meet the 2-year college entrance requirement.

Mandarin Chinese II

10th to 12th Grades

Traditional. This course is designed for those who have finished Chinese 1 with at least a B and are motivated to learn more about Mandarin Chinese and Chinese culture. The focus of the course, in addition to the emphasis on the areas of speaking and listening in the first year, will be on the composition of characters so students will be prepared for reading and writing. Chinese 2 will cover approximately 500 Chinese characters. **(Prerequisite: Mandarin Chinese 1 and teacher recommendation)**

Chapter 7

FINE ARTS



*A painter paints pictures on canvas, but
musicians paint their pictures on silence*

~ Leopold Stowkoski

Fine Arts: Visual

Art 1

9th to 12th Grade

Traditional. A survey course designed for students in grades 9-12 who are enrolling in a high school art course for the first time. This course provides a variety of experiences that build on the concepts, techniques, and use of media introduced in the middle school program. Generally laboratory in nature, Art 1 explores and gives experience in two-dimensional (drawing, painting, printmaking) and limited three-dimensional (sculptural) formats and integrates art history, design principles, and aesthetic criticism and response.

Art Advanced

10th to 12th Grade

Traditional. This course is for students who have successfully completed Art I and who, in the judgment of the instructor, show a sufficient level of interest and/or ability that would warrant continued study in Visual Art. This ensures that students who continue beyond the first year will grow in their artistic development. Students may continue in Advanced Art on a space-available basis and may repeat Advanced Art yearly at the determination of the instructor. (**Prerequisite: A/B in Art I and teacher recommendation**)

Art Honors

11th to 12th Grade

Traditional. Honors Art is for students who are just starting the AP portfolio or for students that need more time to complete the portfolio. It is also for students not planning on submitting an AP portfolio, but who are developing a portfolio for college application (for art, digital art careers, and design fields such as architecture, industrial and interior design, for example). May be repeated or taken concurrently with AP Studio Art. (**Prerequisite: A/B in Advanced Art and/or teacher recommendation**)

AP Studio Art

11th to 12th Grade

Blended. The AP Studio Art portfolio is designed for students who are seriously interested in the practical experience of art. AP Studio Art is not based on a written examination; instead, students submit portfolios for evaluation at the end of the school year. (**Prerequisite: A/B in Honors Art and teacher recommendation**)

AP Studio Art: 2D Design

11th to 12th Grade

Blended. The Advanced Placement 2D Design Portfolio is intended to address a very broad interpretation of two-dimensional (2D) design issues, which involves purposeful decision-making about how to use the elements and principles of art in an integrative way. For this portfolio, students are asked to demonstrate proficiency in 2D design using a variety of art forms. These could include, but are not limited to, graphic design, typography, digital imaging, photography, collage, fabric design, weaving, illustration, painting, and printmaking. A variety of approaches to representation, abstraction, and expression may be part of the student's portfolio. (**Prerequisite: A/B in Honors Art and teacher recommendation**)

Fine Arts: Vocal Music

AP Studio Art: Drawing

11th to 12th Grade

Blended. The Advanced Placement Drawing Portfolio is designed to include a very broad interpretation of drawing issues. Many types of painting, printmaking, studies for sculpture, and some forms of design, as well as abstract and observational works, could qualify as addressing drawing issues. The range of marks used to make drawings, the arrangement of those marks, and the materials used to make the marks are endless. Works of photography, videotape, and computer-generated works may not be submitted for the Drawing Portfolio. **(Prerequisite: A/B in Honors Art and teacher recommendation)**

AP Studio Art: 3-D Design

11th to 12th Grade

Blended. The AP 3-D Design class is intended to address a broad interpretation of sculptural issues in depth and space. These may include mass, volume, form, plane, light, and texture. Such elements and concepts may be articulated through additive, subtractive, and/ or fabrication processes. A variety of approaches to representation, abstraction, and expression may be part of the student's portfolio. These might include traditional sculpture, architectural models, apparel, ceramics, three-dimensional fiber arts or metal work, among others. **(Prerequisite: A/B in Honors Art and teacher recommendation)**

Vocal Music

9th to 12th Grade

Traditional. Vocal Music is for beginning choral students who seek to perform a wide variety of sacred and secular choral literature of easy to medium easy difficulty in a variety of styles. Emphasis is placed on vocal production and basic choral techniques, intonation, phrasing, sight reading, general musicianship skills, and understanding and attitudes of individuals to the group. There are no prerequisites for this course, although the teacher may recommend some very basic minimum requirements. *Beginning this year, we will have a Male section and a Female section on L and N days. These classes will combine on Mastery Days. Class performances will be mandatory, and after school rehearsals may be required.*

Choral Ensemble

10th to 12th Grade

Traditional. Choral Ensemble consists of students with previous choral experience approved by the director. Emphasis is placed on an advanced degree of musicianship, increased harmonic and rhythmic reading skills, and higher-level performance skills. Opportunities are provided for performance in school and community, including regional and state audition clinics. Class performances will be mandatory, and after school rehearsals may be required. **(Prerequisite: Vocal Music 1, audition, and teacher recommendation)**

Fine Arts: Instrumental Music

Concert Band: Woodwinds and Brass

9th to 12th Grade

Traditional. Concert Band – Woodwind and Brass is available to all 9th through 12th grade students who play either a woodwind or brass instrument. Students will be expected to maintain a regular practice schedule and adhere to all musical expectations of the director. The school provides low brass and low woodwind instruments to students of these instruments. All students are expected to provide auxiliary needs for their specific instrument (reeds, cloths, valve oil, etc.). Students will study a variety of literature, including marches, waltzes, orchestral transcriptions, world music, folk, and traditional band literature from 20th and 21st Centuries. Students are expected to be able to read music notation. Performances and after-school rehearsals will be required. Additional performance opportunities include invitational and audition clinics, festivals, and contests.

Percussion Ensemble

9th to 12th Grade

Traditional. Percussion Ensemble is available to all 9th through 12th grade students who are percussionists. This includes students who study piano. Students will be expected to maintain a regular practice schedule, and adhere to all musical expectations of the director. The school provides percussion instruments to students. Students are expected to be able to read music notation, and must have their own mallets and drumsticks for coursework. Students will study a variety of percussion ensemble literature, including marches, waltzes, orchestral transcriptions, world music, folk, and traditional literature from 20th and 21st Centuries. Performances and after-school rehearsals will be required. Additional performance opportunities include invitational and audition clinics, festivals, and contests.

String Orchestra

9th to 12th Grade

Traditional. String Orchestra is for students studying violin, viola, cello, or double bass. Prior experience with one or more of these instruments is required. String Orchestra provides students with the opportunity of continuing the study and performance of orchestral literature from the Baroque, Classical, Romantic, and Contemporary historical periods. The school provides cellos and double basses to students of these instruments. The course focuses on the development of performance skills for individuals and ensembles, based on the context of the programmed repertoire. Independent practice and concert performances are required. Additional performance opportunities include invitational and audition clinics, festivals, and contests.

Digital Music Production

9th to 12th Grade

Traditional. Digital Music Production offers a practical, fully multimedia-based curriculum designed to teach basic musical concepts through the creative process of composition, recording, and editing. Students will have hands-on experience with digital audio workstation software, and learn how to create, edit, save, and produce digital music. This course is designed to create an in-depth general music experience without having to know traditional music theory. Students will have a meaningful hands-on applied learning experience that impacts not only their musical knowledge, but also their understanding of modern digital audio technology. *This is a lab-based course, and students will be expected to complete their coursework during class.*

Development of Rock and Roll	9th to 12th Grade
<p>NEW. Traditional. This course is designed as a survey of rock and roll music, from its very roots to the music today. Students will develop knowledge and understanding of the musical elements of rock and roll and the major artists within each period. Students will identify the different styles that make up each period and study the social and cultural connections in the creation of rock and roll. Class participation, attendance, research based projects, presentations and completion of all other assignments is required.</p>	

Fine Arts: Theater

Theater Arts 1 for Film and TV

9th to 12th Grade

Traditional. This fine-arts elective is designed for students who have an interest in drama history and acting in front of the camera. The curriculum includes acting technique, stage directions, literary analysis, theater history, stage craft, filming and editing, and theatrical presentation. Students are expected to be outgoing and highly motivated as they collaborate on TV and film projects.

Theater Arts 2 for Film and TV

10th to 12th Grade

Traditional. This fine-arts elective is designed for students who have successfully completed Theater Arts 1 and wish to expand their acting technique as applied to TV and film. The curriculum includes further study in acting technique, filming, editing, and focuses heavily on project-based learning (theatrical presentations). Students in grades 10 to 12 may repeat this class for multiple credits with teacher permission.

(Prerequisite: Theater Arts 1 for Film and TV)

Chapter 8

CAREER
TECHNICAL

Design is not just about what it looks like and feels like. Design is about how it works. ~ Steve Jobs

Digital Arts and Design 1

9th to 12th Grade

Traditional. This core course provides an overview of the graphics and media industries. This course is focused on introducing visual, conceptual, technical and design skills used in the creation of computer graphics, motion graphics, film and video, and animation.

Digital Arts and Design 2

10th to 12th Grade

Traditional. This course is focused on visual, conceptual, and technical design skills used in the digital publishing of computer graphics, motion graphics, film and video, and animation. Focuses will be on finding collaborative design solutions to design problems along with the study of the conceptualization of a message and the process it must go through to accurately and effectively reach its audience. The student will explore various applications of design through extensive study of design principles, visual elements, digital color issues, typography, style, composition, and various problem solving skills. (**Prerequisites: Digital Arts and Design 1 and teacher recommendation**)

Introduction to Animation and Simulation Honors

10th to 12th Grade

Traditional. The class curriculum allows students to explore the scientific, industry and entertainment landscape of animation and simulation while still pursuing a broad-based design education. With an emphasis on 3D Animation and Simulation with focused linkage to STEM Careers, the class exposes students to the breadth of development and design processes. Students can further specialize in visual design, production, engines and systems, graphics programming and animation, mobile, Web, audio and more. Course content is designed to develop a strong foundation of knowledge, which are multi-faceted and essential to the industries. Focus will be on developing understandings and key concepts, processes and strategies that will result in realistic digital effects, products and environments. Along with creative challenges, students will leverage digital tools to gather, evaluate, and use information, encouraging higher order thinking that will translate into focused and innovative animations. Students will explore career opportunities that develop leadership, teamwork, and creative skills that are requisite in many aspects of life and industry. Course content is also related to other pathways. (**Prerequisite: Digital Arts and Design 1 or teacher recommendation**).

Advanced Animation and Simulation Honors	11th and 12th Grade
<p>Blended. The course builds on knowledge acquired from “Intro to Animation and Simulation”, continuing to expand knowledge of the latest technologies that are multi-faceted and essential to the industry. Focus will be on application of and understanding of key concepts. Along with increasingly complex creative challenges, students will leverage additional digital tools and learning such as Fluid Meshes, Micro-displacements & Micro-polygon Displacements, PBR Material Physics, and more. The advanced class curriculum strives to challenge students to explore 3D animation and simulation in relationship to scientific and industry challenges to develop insightful case studies while still pursuing broad-based inquiries into the subject. Students will also explore specialty areas such as “VR” virtual reality, “AR” augmented reality, and other immersive technologies along with High Dynamic Range Imagery and Inverse Kinematics. Advanced students will be challenged to expand, evaluate, and use higher order thinking to develop work that will translate into innovative animations. Students will also explore career opportunities that develop leadership, teamwork, and creative skills that are requisite in many aspects of life and industry. (Prerequisites: Introduction to Animation and Simulation Honors and teacher recommendation).</p>	

Information Technology Foundations	9th to 12th Grade
<p>Traditional. Upon completion of this course, proficient students will be able to describe various information technology (IT) occupations and professional organizations. Moreover, they will be able to demonstrate logical thought processes and discuss the social, legal, and ethical issues encountered in the IT profession. Proficient students will also demonstrate an understanding of electronics and basic digital theory; project management and teamwork; client relations; causes and prevention of Internet security breaches; and writing styles appropriate for web publication. Upon completion of the ITF course, students will be prepared to make an informed decision about which Information Technology program of study to pursue. This course is a prerequisite for both Computer Systems and Web Design.</p>	

Web Design 1: Foundations

9th to 12th Grade

Traditional. Web Design Foundations is a course that prepares students with work-related web design skills for advancement into postsecondary education and industry. The course is intended to develop fundamental skills in both theory and practical application of the basic web design and development process, project management and teamwork, troubleshooting and problem solving, and interpersonal skill development. This course is taught in a hands-on laboratory environment with experiences that simulate those found in the web design and development industry; where interaction with a “client” is indicated in the standards. It is expected that students’ peers or the instructor may serve as mock clients in lieu of an actual relationship with an industry partner. Upon completion of this course, proficient students will be prepared for more advanced coursework in the Web Design program of study.

(Prerequisite: Information Technology Foundations or teacher approval).

Web Design 2: Site Designer

10th to 12th Grade

Traditional. Web Site Development builds on the skills and knowledge gained in Web Design Foundations. Emphasis is placed on applying the design process toward projects of increasing sophistication, culminating in the production of a functional, static website. As students work toward this goal, they acquire key skills in coding, project management, basic troubleshooting and validation, and content development and analysis. Artifacts of the work completed in this course will be logged in a student portfolio demonstrating mastery of skills and knowledge. Upon completion of this course, proficient students will be prepared to pursue a variety of postsecondary programs in the computer sciences, sit for industry certification, or apply their skills in a capstone Web Design Practicum. **(Prerequisite: Web Design Foundations)**

Web Design: Practicum

11th and 12th Grade

NEW. Blended. Web Design Practicum is a capstone course intended to provide students with the opportunity to apply the skills and knowledge learned in previous Web Design courses toward the completion of an in-depth project with fellow team members. Students who have progressed to this level in the Web Design program of study take on more responsibilities for producing independent work and managing processes involved in the planning, designing, refinement, and launch of a website.]Students learn to refine their skills in problem solving, troubleshooting, teamwork, marketing and analytics, and project management. Upon completion of the practicum, proficient students will be prepared for postsecondary study and career advancement in web design. **(Prerequisites: Web Design Foundations and Web Site Development)**

Computer Systems

9th to 12th Grade

(Not offered in 2017-18 year) Traditional. Computer Systems is an intermediate course designed to prepare students with work related skills and aligned certification in the information technology industry. Content provides students the opportunity to acquire knowledge in both theory and practical applications pertaining to hardware, operating systems, safe mode, command prompt, security, networking, printers, peripheral devices, laptops, mobile devices, troubleshooting, and customer service management. Upon completion of the course, proficient students will have acquired skills and knowledge to install, configure, and maintain computer systems. Students who are proficient in this course will be eligible to pursue the IT industry standard credential, CompTIA's A+ certification. **(Prerequisite: Algebra 1)**

Networking

10th to 12th Grade

Traditional. Networking is an advanced course designed to emphasize the conceptual and practical skills necessary to design, manage, and diagnose network hardware and software. Upon completion of this course, proficient students will identify types of networks, understand the layers of the open systems interconnection (OSI) model, prevent security risks, and apply troubleshooting theory to the successful execution of networking tasks. Course content covers transmission control protocol, internet protocol, wired and wireless topologies, switching and routing, network hardware, wireless networking, and network operating systems (NOS). Upon completion of this course, proficient students will be prepared to sit for the CompTIA Network+ exam. **(Prerequisite: Computer Systems)**

Chapter 9

PHYSICAL
EDUCATION



*Don't let what you can't do stop you
from doing what you can do ~
Coach John Wooden*

Lifetime Wellness**9th to 12th Grade**

Traditional. The goal of Lifetime Wellness is for the student to learn a lifetime process of positive lifestyle management that works to integrate the emotional, social, intellectual, and physical dimensions of self for a longer, higher quality of life. The class consists of the following strands: Disease Prevention Control, Mental Health, Nutrition, Physical Fitness, Safety and First Aid, Sexuality and Family Life, and Substance Use/ Abuse.

Physical Education**9th to 12th Grade**

Traditional. The focus of this class is on fitness and lifetime activities. It is designed to teach basic fitness principles while participating in a variety of activities. Lifetime activities include fitness, individual and team sports, games and outdoor activities. The purpose of this class is to demonstrate to students the positive benefits and impact exercise can have throughout their lives.

Physical Education Advanced**10th to 12th Grade**

Traditional. Advanced Physical Education will provide learning opportunities for students to further develop skills and knowledge related to fitness, physical competence, and cognitive understanding about physical activity that promotes a healthy and physically active lifestyle. Students will acquire knowledge and skills in recreational, athletic and lifetime activities that focus on lifetime fitness. Students will create their own fitness plan that they will then implement individually and collect results. Fitness testing activities will be administered through out the year to guide individual personal fitness plans. **(Prerequisite: Physical Education I or completion of a varsity level sport)**

Physical Education Advanced Blended**10th to 12th Grade**

Student must have motivation and desire to participate in this class. The focus of this class is on individualized fitness. Students will be responsible for designing, implementing and recording their individual fitness program and progress throughout the year. Weekly logs and plans are required for the class. Students will also have weekly assignments related to cognitive understanding of physical activity and healthy lifestyle. Fitness testing will be administered each grading period to use as assessment. Most work will be done outside of class, but some instructional time with teacher will be required. **(Prerequisite: Physical Education 1 and teacher recommendation)**

Chapter 10

GENERAL
ELECTIVES



*Intelligence plus Character - that is the
goal of a true education ~*

Dr. Martin Luther King

Driver's Education

10th to 12th Grade

Traditional. A class available to students at least 15 years of age prior to beginning the course in grades 10-12. The instructional phase consists of classroom simulation, driving range, and on-street driving instruction. The course will be taught as a one unit course with sufficient instructional contact time with the driver education teacher and the inclusion of safety education. Learner's permits are not required but are highly recommended to allow parents to work with the student to coincide with the drive time they will receive in class to prepare for the driving test. All students must meet state requirements for attendance and academic progress.

Introduction to Philosophy

10th to 12th Grade

Traditional. What is the true nature of reality? Do we have free will, or is our behavior causally determined? Is there a limit to the knowledge we can have about our world? Ourselves? How do we acquire personal identity, from society or ourselves? What's the best way to live our lives? Is there a legitimate form of government, or is government in principle a necessary evil? Is what we call right and wrong, good and evil, merely relative to our culture and conditioning? These questions and many others are posed to students who accept the invitation to philosophy. In addition, this course provides an introduction to the major philosophies and philosophers of the Western tradition, beginning with the ancient Greeks and continuing up to the present time. Emphasis is placed on interacting with primary texts; listening, thinking, speaking; writing clearly and persuasively; constructing logical, coherent arguments; and the Socratic method.

African American History

11th to 12th Grade

NEW. Blended. Students will examine the life and contributions of African Americans from the early 1600's through modern America. Students will explore the influence of geography on slavery and the growth of slavery on the American continent. Students will consider urban and rural African American communities and institutions in the North and South leading up to and during the Civil War. Students will investigate the rise and effects of Jim Crow and trace the impact of African American migration through the early twentieth century. Students will explore the impact of the Harlem Renaissance and the conditions and contributions of African Americans during the Great Depression and World War II. Students will examine the successes and failures of the Civil Rights Movement and consider the contemporary issues confronting African Americans. This class will be largely independent study online with meetings one day per week. These meeting days will be required and will often include guest speakers familiar with the topics being studied. **(Prerequisite: Social Studies or English Teacher recommendation, 3.0 GPA, Administration approval)**

Dual Enrollment**12th Grade**

Traditional. Dual enrollment courses allow juniors and seniors to obtain both high school and college credit. These courses are offered through higher education institutions and are available in various locations across Knox County. There may be a cost associated with these classes. Students are responsible for their own transportation if taking a dual enrollment course. Because the L&N STEM Academy operates on an alternating block schedule of L & N days, it is difficult to schedule dual enrollment classes during the school day and will only be approved for first or fourth block time frames. All dual enrollment classes must be approved by the School Counselor. The high school schedule of courses at the L&N STEM Academy always takes first priority over dual enrollment courses. A dual enrollment application will be available through the school website and is required for enrollment in a course. *Students must email a copy of their registration to their counselor before their schedule will be finalized.* Please visit the School Counseling page of the L&N STEM Academy's website for links to more information about eligibility and steps for enrollment. Students must meet the minimum GPA and ACT scores for the classes in which they wish to enroll. There may be fees associated with this process.

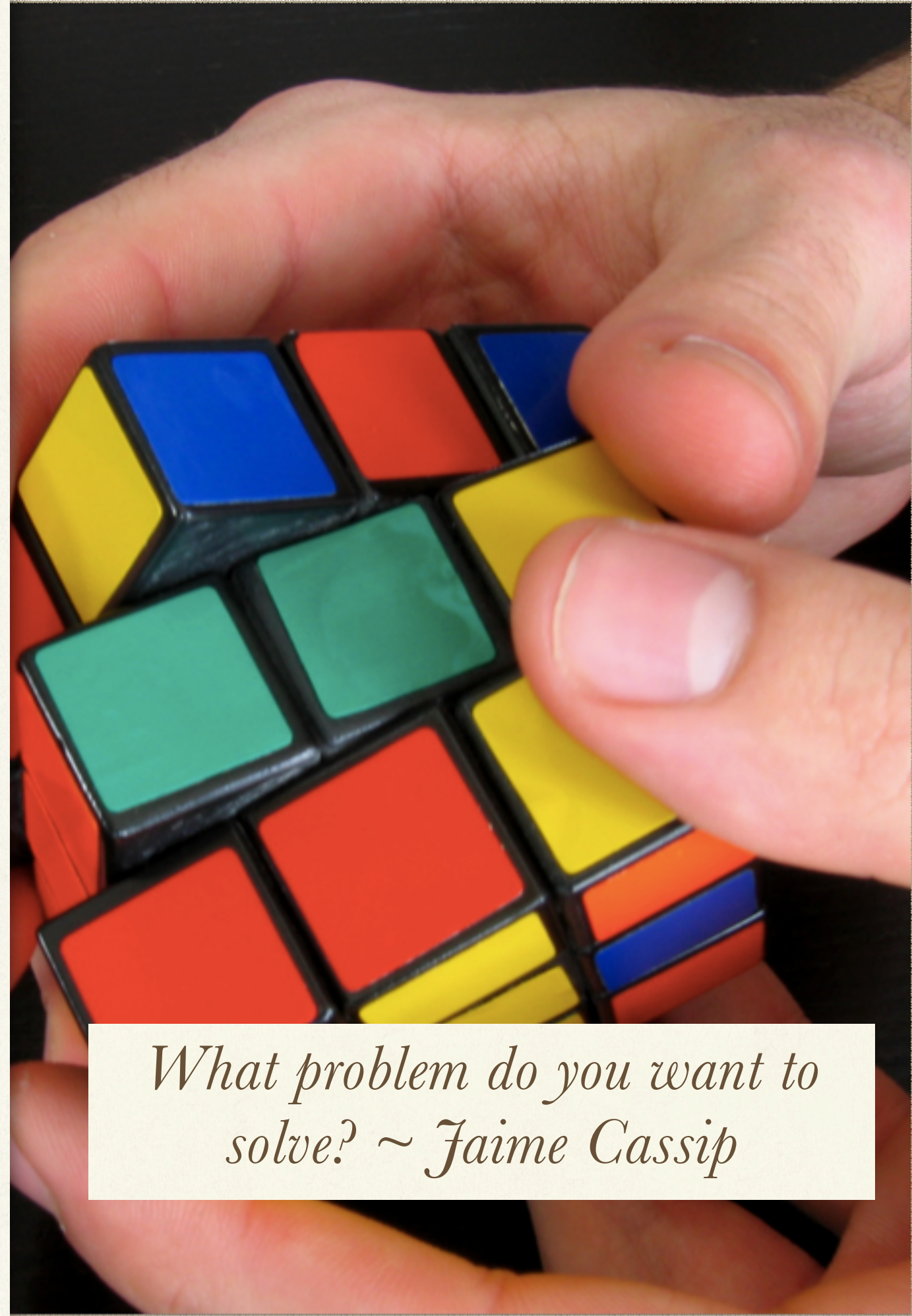
Peer Tutoring**11th and 12th Grade**

Traditional. A course designed for students who desire to help give academic and social support to fellow students. Students may earn multiple credits by working the Learning Center, or other locations as assigned by the teacher of record. Students will have to an A/B average in the area to which they apply to tutor. We will accept tutors in Math, English, Science, and Social Studies. **(Prerequisite: Application with department chair and administrator approval)**

Chapter 11

SCIENTIFIC
RESEARCH

*What problem do you want to
solve? ~ Jaime Cassip*



Scientific Research 1

9th or 10th Grade

(Required Elective) Traditional. The Scientific Research 1 course is the foundational course in the sequence. The course introduces students to the Problem-Based Learning (PBL) approach that is unique to our school. Students will participate in activities that emphasize the following: knowledge acquisition, soft-skill development, foundational skills of research, presentation skills, communication skills, written reflections and critical thinking skills, while developing students' understanding of the Stanford d-School design process. It includes an introduction to technical writing, analysis of data, and conclusions. Students will be required to give audio-visual presentations appropriate to the areas of study given in the course. Students will be introduced to the 11 major areas of STEM in a way that will guide them toward selecting a focused area in Scientific Research 2.

Scientific Problem Solving

10th or 11th Grade

Blended. This is a course in which students, working in small group cohorts, conduct an in-depth research project and presents their findings through the Internet Science and Technology Fair. Two major components of the course are: 1) a technical report including sections for literature search, design, procedures, analysis of data, experimental results, conclusions, and future directions; and 2) an audio-visual presentation that is appropriate to the nature of the research and the type of audience. Student will choose from a list of critical technologies for their study. Critical technologies include Materials, Manufacturing, Information and Communication, Transportation, Living Systems, Energy, and Environmental Quality. Students work in a blended learning environment in which approximately 25 to 30% of their time is spent with a teacher and the remaining time is completed in outside of class interactions between the group and a STEM professional assigned to the project. The final project of the course will be a website created to display the project research and findings in accordance with the ISTF guidelines. Information on the Internet Science and Technology Fair can be found here: <http://istf.ucf.edu/>. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* **(Prerequisite: Successful completion of Scientific Research 1 with a B or higher and teacher recommendation)**

Scientific Modeling

11th or 12th Grade

Facilitated Virtual. A continuation of Scientific Research 2, this is a course in which students, working in small group cohorts, conduct an in-depth research project and presents their findings through the Internet Science and Technology Fair. Two major components of the course are: 1) a technical report including sections for literature search, design, procedures, analysis of data, experimental results, conclusions, and future directions; and 2) an audio-visual presentation that is appropriate to the nature of the research and the type of audience. Student will choose from a list of critical technologies for their study. Critical technologies include Materials, Manufacturing, Information and Communication, Transportation, Living Systems, Energy, and Environmental Quality. Students work in an online environment with minimal teacher interaction. Students work closely with a STEM professional assigned to the project. The final project of the course will be a website created to display the project research and findings in accordance with the ISTF guidelines and a prototype of the solution offered. Information on the Internet Science and Technology Fair can be found here: <http://istf.ucf.edu/>. Students must have motivation and desire to participate in this program. *Students and parents must attend a blended orientation to participate.* (**Prerequisite: Successful completion of Scientific Research 2 with a B or higher and Science Research 2 teacher recommendation**)

Chapter 12

AP
CAPSTONE™



AP Seminar	11th & 12th Grade
<p>Blended. AP Seminar is a foundational course that engages students in cross-curricular conversations that explore the complexities of academic and real-world topics and issues by analyzing divergent perspectives. Using an inquiry framework, students practice reading and analyzing articles, research studies, and foundational literary and philosophical texts; listening to and viewing speeches, broadcasts, and personal accounts; and experiencing artistic works and performances. Students learn to synthesize information from multiple sources, develop their own perspectives in research-based written essays, and design and deliver oral and visual presentations, both individually and as part of a team. Ultimately, the course aims to equip students with the power to analyze and evaluate information with accuracy and precision in order to craft and communicate evidence-based arguments. © 2016 The College Board.</p> <p>AP Seminar is the first of two courses in the AP Capstone™ program. AP Seminar is a prerequisite for AP Research. Students must have motivation and desire to learn in a blended style that requires high-level, self-paced participation both online and in-person. Students and parents must attend a Blended Orientation to participate. Summer assignments are required. Open to 11th and 12th grade students. (Prerequisite: Teacher recommendation)</p>	

AP Research	12th Grade
<p>Blended. Offered in the 2018-2019 Academic Year. Replace this text.</p>	