L&N STEM

Academy

Course Catalog

2018 - 2019

Chapter 1

L&N STEM ACADEMY

COURSE CATALOG
2018 - 2019

General Information

L&N STEM Academy

ADMINISTRATION
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SCHOOL COUNSELING DEPARTMENT
Lori Morrell (A-J), School Counselor Paul Sudderth (K-Z), School Counselor Lyn Johnson, Administrative Assistant Sarah Salerno, Testing Coordinator
Empower. Inspire. Impact.
Carpe Scientiam

What Is STEM?

Although it is widely understood that the acronym STEM references Science, Technology, Engineering and Mathematics, the essential element of high quality STEM education is not a narrow focus, but an open-mind discipline that is empowered by scientific reasoning, technological expertise, engineering design, and mathematical logic.

Our STEM classes move "real world" problems into the classroom, raising the stakes for students, inspiring genuine engagement, and developing the skills of self-directed learners.

Our integrated curriculum delivered through authentic instruction develops students' abilities to make connections, work in teams, ask questions, gather and interpret information, evaluate sources, draw meaningful inferences, and defend their conclusions -- useful skills for future graduates pursuing any major or career path.

Internships and cooperative education experiences envisioned by the L&N STEM Academy are not designed to polish specific vocational skills that will likely be obsolete soon after graduation, but to equip and prepare graduates for higher education and careers we cannot even imagine today.

At the L&N STEM Academy, technology will support learning and collaboration, providing an infrastructure so pervasive as to be almost transparent. Families should support students practicing these habits, always remembering that students are the essential actors in their own genuine education.

Our Vision

The L&N STEM Academy is a leader in STEM education, through unique and innovative course offerings, faculty participation in international organizations, and by facilitating national and international collaborative efforts for our students. As a platform school, we seek to establish global partnerships to develop and enhance research-based practices. Our faculty delivers inquiry-based instruction in small learning communities, challenging students to solve real world problems. Through a design thinking approach, students develop critical thinking skills enabling them to become empathetic and collaborative citizens. Students own their learning outcomes preparing them for success in postsecondary education. Graduates of the L&N STEM Academy are characterized by their professionalism, service, and integrity.

Understanding Our Why

Simon Sinek says, “People don’t buy what you do. They buy why you do it.” In order to move toward our vision of Boundless STEM: Learning and Leading, we must observe why we are here in the first place.

Why does this school exist?

Why was it built around the magnet theme of STEM?

Why are you a student at this school?

Why do other students choose to come here? And why do they stay or leave?

At the center of it all is the why.

We believe STEM education is the best format to help our students succeed both in school and beyond it. STEM, for us, is more than the

sum of its initials. While we emphasize students choosing a mission in Science, Technology, Engineering, or Math, we also accept that not every student at our school is interested in pursuing those careers.

As a result, we have enlarged STEM to a way of thinking, of problem solving, and of looking at the world. We chose the d.school process from Stanford as the method for our why.

The d.school process embraces a way of developing change and improving life on every level. It is a human approach to STEM that begins with the idea that problems are only worth solving if they actually help the people for whom they are solved. As a result, the d.school process begins with empathy, a core believe and STEM habit for our school.

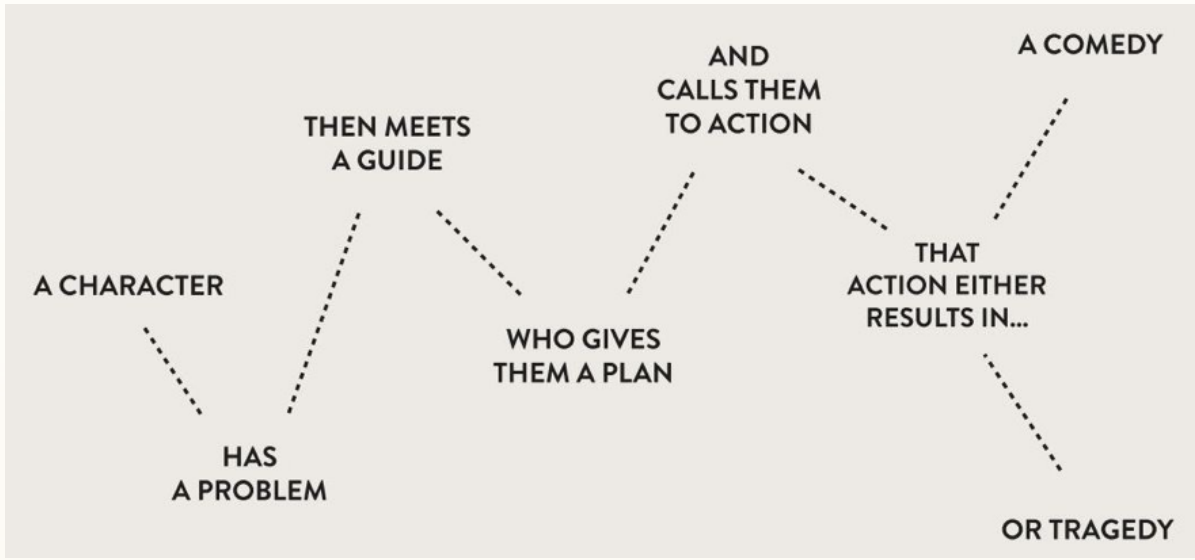
Empathy doesn't just ask, "What do you need?" It attempts to get at the heart of, "Why do you need it this way?" Understanding the human why is tantamount to understanding our school's why.

Every employability skill listed as necessary for the future workforce is encapsulated within the framework of the d.school process as it relates to STEM. Empathy, Problem solving, Collaboration. Seeing the big picture. Critical Thinking. Creativity. They are all there within the Problem-based Learning activities we use to engage and inspire our students.

Learning these skills is just as important in the Humanities as it is in the Sciences. It is just as important in the Arts and Languages as it is in Technology trades

Our Story is Our Why

To help build a framework around our Mars Shot of Boundless STEM: Learning and Leading, we have developed a student and teacher story using the model by Don Miller.



In these stories, teachers and students are the main characters. They have a problem: reaching the pinnacle of boundless STEM learning and leading. The stakes are high if they fail. So, they each seek out guides that help them along the journey. These guides give them a plan and a call to action. Accepting that call leads to success, and the successful completion of the journey to Mars!

Our Students' Story

Students at the L&N STEM Academy are a little bit different. They're curious, ambitious, digital natives, and that difference, that curiosity and ambition, has brought them to our school. Students come to the L&N looking for opportunities they won't find anywhere else: boundless opportunities to explore STEM subjects and careers, opportunities

to belong to a community of similarly curious, ambitious students, and opportunities to change the world.

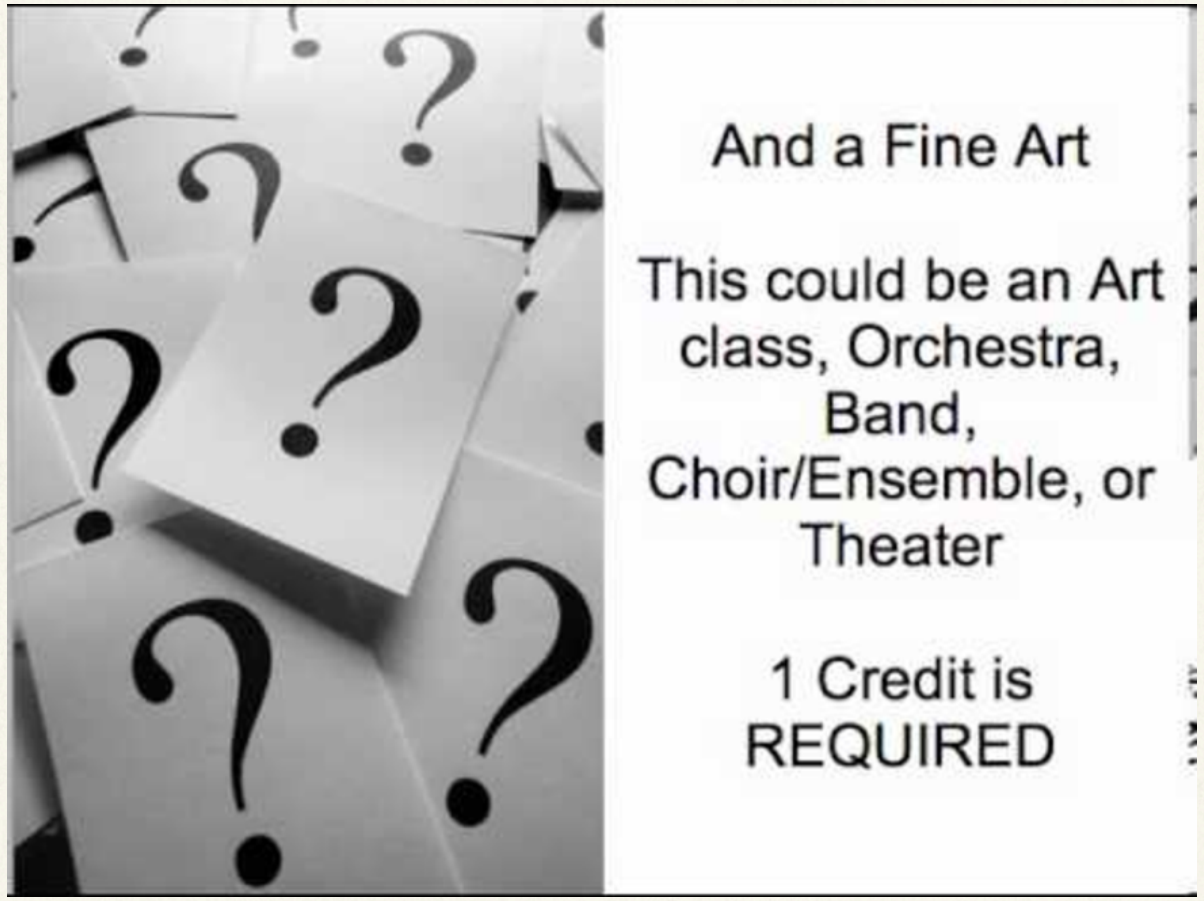
But they may not know how vast their STEM opportunities are. They may be unsure of how to belong and contribute to a community. And they don't know - yet - just how they're going to change the world. If they don't learn these things now, during these critical years, they'll miss those opportunities to learn, to belong, to contribute and to change.

Fortunately, at the L&N STEM Academy, students engage with caring teachers, administrators, librarians, STEM professionals, and counselors who help them discover the expansive array of STEM opportunities before them. They collaborate with similarly motivated students who simultaneously accept them as they are and challenge them to be more than they ever thought possible.

And these students discover how they can - and will - change the world: through human-centered STEM principles grounded in empathy, through professionalism and collaboration, through innovation and design, through inquiry and critical thinking.

When our students are successful, they will be empowered to indulge their curiosity and achieve their ambitions. They will not only seek opportunities, they will seek to create opportunities for others; they will not only be part of a community, they will create communities; they will not only change their world, they'll change our world in boundless ways.

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



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

L&N STEM Academy Course Planning Guide

Please see specific sections for more in-depth course progressions

ENGLISH:	ENG 9	ENG 10	ENG 11	ENG 12
Honors Recommendation	Honors - placed in H World History and Latin 1	Honors	AP English Language & Composition	AP Literature & Composition
College Prep Recommendation	College Prep Placed in World History CP and Etymology	College Prep	College Prep	College Prep or Dual Enrollment

MATH:	MATH 9	MATH 10	MATH 11	MATH 12
Completed Algebra 1 in 8th grade	Integrated Math 2 CP or Honors	Algebra 2 Honors	Pre-Calculus Honors	AP Calculus AB and BC
No Algebra 1 in 8th grade	Integrated Math 1	Integrated Math 2	Integrated Math 3	Teacher Recommendation

SCIENCE:	SCI 9	SCI 10	SCI 11	SCI 12
Completed Physical Science and Algebra 1 in 8th grade	Chemistry 1 Honors (with placement test results)	Biology 1 Honors	See course progression chart in the Science section	See course progression chart in the Science section
Completed Algebra 1 in 8th Grade	Atmospheric, Earth, and Planetary Science Honors	Chemistry 1 Honors or Physics	Biology 1 Honors	See course progression chart in the Science section
No Algebra 1 in 8th grade	Atmospheric, Earth, and Planetary Science CP	Chemistry 1 CP or Physics	Biology 1 CP	See course progression chart in the Science section

SOCIAL STUDIES:	SS 9	SS 10	SS 11	SS 12
Start at English 1 Honors	World History and Geography Honors	AP Government	AP US History Combined	Economics & Personal Finance
Start at English 1 College Prep	World History and Geography CP	US Government/ Civics CP	US History and Geography CP	Economics & Personal Finance

AN EXPLANATION OF LABS

Digital Labs — 9th to 12th Grades

With our Mastery Monday schedule, some students have one or more blocks where they are not in a credit-bearing course. In this instance, we place them in a Digital Lab in order to have a record of their attendance and make sure there is a teacher overseeing their time. Digital Labs are to be used for homework, study, test preparation, group work, and more. It is meant to be a quiet study time for students to relax from their course load. Students are placed in Digital Labs. They are not requested. In addition, they are not optional.

Research Labs — 9th to 12th Grades

Research Labs are held on Mondays only. They are primarily a study hall time for students. They differ from Digital Labs in that once every three weeks students travel to the Lawson Magee Downtown Library branch for a learning time related to research. Students work with their Lab teacher, our school Librarian, an English teacher, and the downtown librarians to refine their efforts for research and research/technical writing. Students are placed in Research Labs. They are not requested.

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 ear 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

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.

POSSIBLE ELECTIVE AREA OF FOCUS OPTIONS	
Career and Technical Education (CTE)	Advanced Placement (AP)
Science and/or Math	ROTC or Physical Education
Humanities	Human Services
Fine Arts	STEM

L&N STEM ACADEMY AP COURSE EXPECTATIONS				
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

STEM ACADEMY

Elective Options for 2018-2019 School Year

English
Journalism 1 (9-12) Yearbook (10-12)
Science Fiction (10-12)

Math
Pre-Calculus, College-Prep (11,12)
Pre-Calculus, Honors (11,12)
Statistics, College Prep (11,12)
AP Statistics (11,12)
Applied Mathematics, College Prep (12)
AP Computer Science (11,12)
AP Computer Science Principles (11,12)
AP Calculus AB (11,12)
AP Calculus BC (11,12)

Social Studies
AP US History Combined Studies (11)
AP Human Geography (10-12)
AP European History (10-12)
AP Psychology (11,12)

Fine Arts
Art 1
Art Advanced General (10-12)
Art Advanced Drawing (10-12)
Art Honors (11,12)
AP Studio Art: 2D Design (11,12)
AP Studio Art: Drawing (11,12)
AP Studio Art: 3-D Design (11,12)
Vocal Music 1 (9-12)
Choral Ensemble (10-12)
Concert Band: Woodwinds & Brass
Percussion Ensemble (9-12)
String Orchestra (9-12)
Digital Music Production (9-12)
Development of Rock and Roll (9-12)
Theater Arts 1 for Film and TV (9-12)
Advanced Theater Arts (10-12)

Science
Anatomy and Physiology (11, 12)
Astronomy (10-12)
Microbiology (11, 12)
AP Environmental Science (10-12)
Physics, Honors (11,12)
AP Physics C (Calculus Based) (11,12)
Geology (10-12)
Organic & Biochemistry, Honors (11,12)
Scientific Problem Solving (10,11)
Scientific Modeling (11,12)

Career & Technical
Digital Arts and Design 1 (9-12)
Digital Arts and Design 2 (10-12)
Digital Arts and Design 3 (10-12)
Introduction to Animation and Simulation (10-12)
Advanced Animation and Simulation (11,12)
Web Design 1: Foundations (9-12)
Web Design 2: Site Designer (10-12)
Web Design 3: Practicum (11-12)
Information Technology Foundations (9-12)
Cybersecurity (10-12)
Computer Systems (10-12)

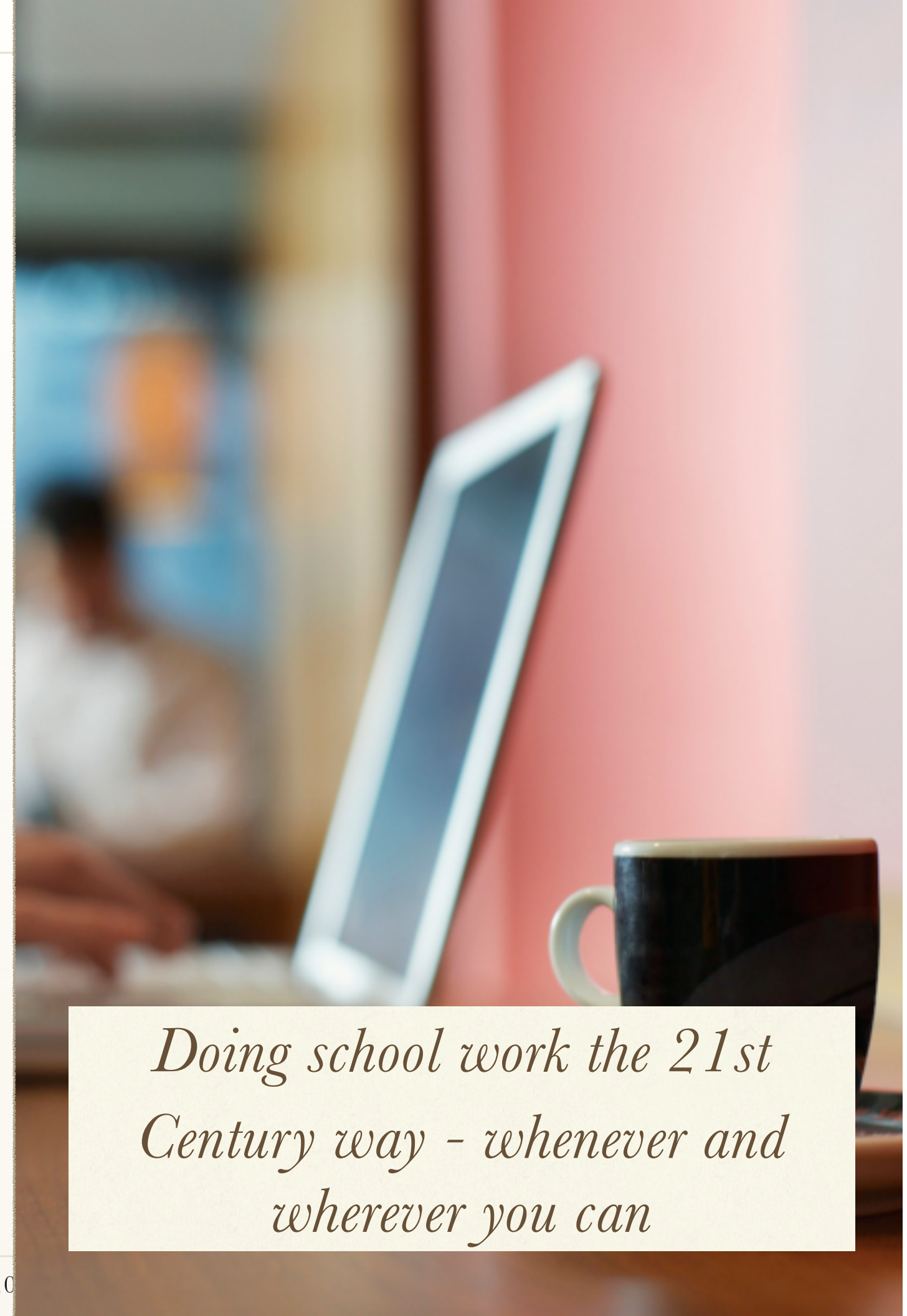
AP Capstone
AP Seminar (11,12)
AP Research (11,12)

General Electives
Driver's Education (9-12)
Introduction to Philosophy (10-12)
African American History (11,12)
Dual Enrollment (11,12)
Peer Tutoring (11,12)
Advanced PE (11,12)

World Languages
Latin 3, Honors (11,12)
Latin 4, Honors (11,12)
AP Latin Vergil and Caesar (11, 12)
Mandarin Chinese I (9-12)
Mandarin Chinese II (10-12)
Mandarin Chinese III (10-12)

Design Thinking
Scientific Research 1 (required elective) (9,10)
Scientific Problem Solving (10,11)
Scientific Modeling (11,12)

Types of Courses Offered



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 facilitating collaborative learning among 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 scheduled 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 not occur at all.

Students have an opportunity to work with their 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 assigned. 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 help ensure that 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 upon a case-by-case basis. They are only approved when circumstances do not offer any other solutions.

Comparing Instructional Types

	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. Additionally, these formats help foster better self-advocacy in students by encouraging a growth mindset and a passion for learning.

Greater student ownership 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. Important life skills are a 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 ~ Henry Ford

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 percent 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-percent-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 Google's 20-percent-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 rang*e of innovations including training tools for other branches."

Genius Hour in Education

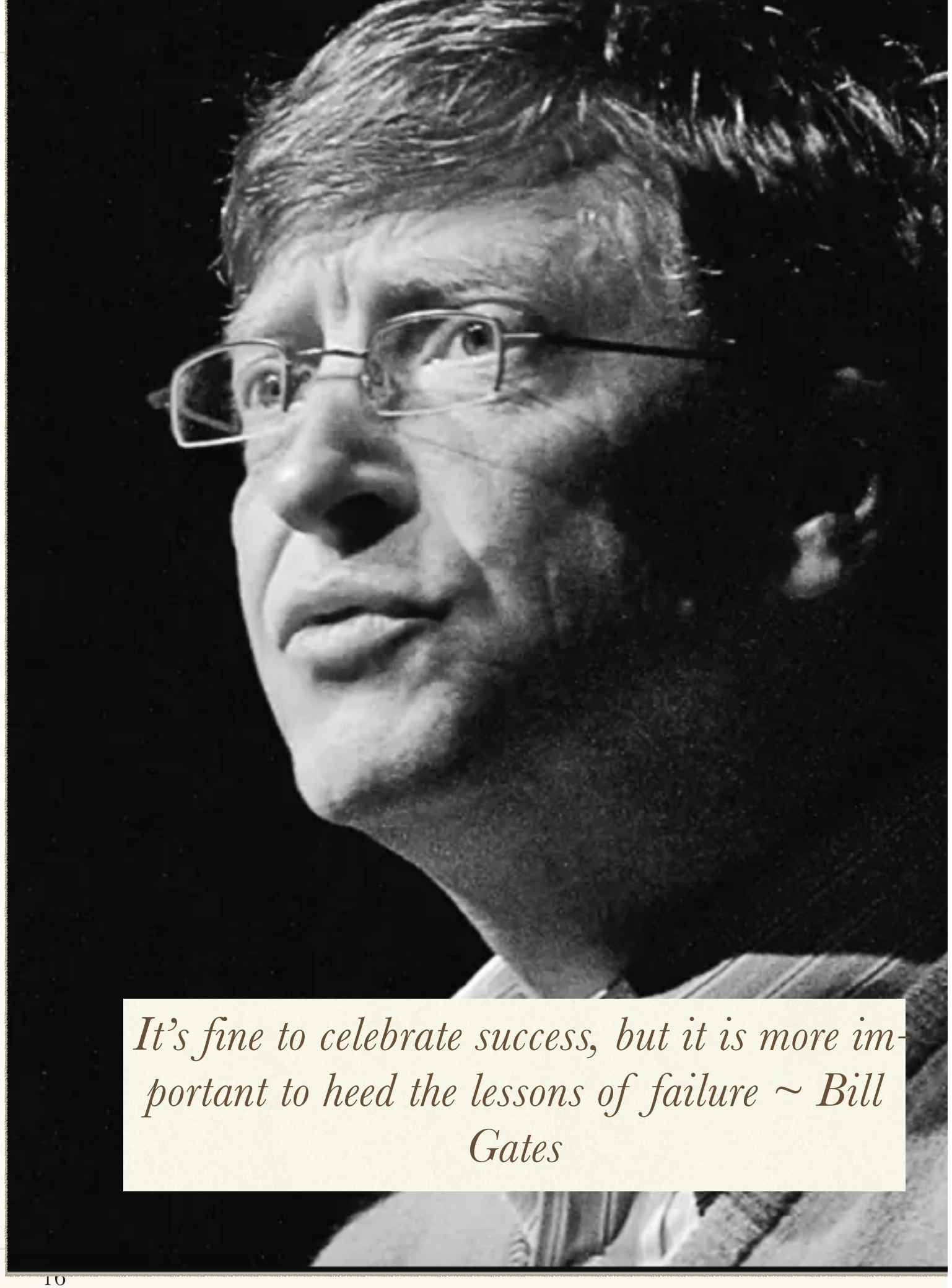
The same genius hour principles apply in the classroom as they do in the corporate environment. The teacher provides a set amount of time for the students to work on their passion projects. Students are then challenged to explore something they want to learn about. They spend several weeks researching 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 projects; 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.

AP Credits



It's fine to celebrate success, but it is more important to heed the lessons of failure ~ Bill Gates

What Is an AP Credit?

AP stands for Advanced Placement and is a course approved by the College Board as meeting the demands of a college-level course for reading, writing, collaboration, and critical thinking. On your end-of-year report card, the successful completion of an AP level course will see an additional 5 points added to the final GPA. If you make a 95 in the class based on your course work, the report will show a 100. We call these "rigor points," and they indicate that the work you did was far and above what a CP or Honors level course would have asked you to do in the same subject.

AP credits also offer students the opportunity to test out of certain college level credits by performing well on the AP test associated with the course taken. Each college is different regarding AP credit policies, so be sure and check with the college you want to attend before committing to a class. At the end of this section you will see the AP courses we offer and the requirements at both Pellissippi State Community College and the University of Tennessee at Knoxville. These may change from year to year, so be sure and check the latest updates on the individual college websites.

Who Can Take an AP Class?

The L&N STEM Academy has AP classes starting in grade 9 and offerings each year through graduation. Prerequisites can vary from course to course and department. In most cases, we are looking for students who have already completed an Honors level course with a B or higher. In addition, AP courses will require either a teacher recommendation or a departmental recommendation.

AP courses are taught on the college level and may, with appropriate test scores, be accepted as college credit for 2-year or 4-year institutions. Because of the more in-depth nature of the classes, with a higher degree of difficulty than other courses at the school, we are looking for students with a good, solid work ethic, who has the time to invest in the course, and has a good track record of academic success.

How Many AP Classes May I Take?

Ultimately, that depends on the student. As a rule of thumb, we limit AP credits to 4 per year unless a student has a signed parent waiver. Most students take 1 or 2 credits in a year.

The question is not so much "how many may I take?" as it is "where do I cross the line from success to mediocrity?" That changes from student to student.

Tell Me More About The Parent Waiver

If a student wants to take more than 4 AP classes (this is a combination of AP or Dual Enrollment classes), a parent waiver must be signed and on file in the guidance office. The waiver states that the parent understands this work load is not recommended, and also indicates that the parent or student will not ask for, nor expect, a change in schedule if the work load proves too difficult after the start of the year.

AP COURSE	TEST SCORE	PELLISSIPPI CREDIT	TEST SCORE	UT KNOXVILLE CREDIT
AP Studio Art	3	ARTH 2010	4 or 5	Art LD
AP Studio Art 2-D	3	ARTP 1010	4 or 5	Art LD
AP Studio Art 3-D	3	ARTP 1020	4 or 5	Art LD
AP Biology	3	BIOL 1010 or 1020	3	Biology 101
	4	BIOL 1010/1020 or 1110/1120	4	Biology 101-102
			5	Biology 101-102 and 160
AP Chemistry	3	CHEM 1110	4 or 5	Chemistry 120-130
	4			
AP Government	3	Social Science Core Requirement	4 or 5	Political Science 101
AP Computer Science A	3	CISP 1010	5	Computer Science 102
AP Computer Science Principles			5	Computer Science 100
AP English Language	3	ENGL 1010	4 or 5	English 101
	4	ENGL 1010-1020		
AP English Literature			4 or 5	English 101
AP Environmental Science	3	Natural Science Core Requirement	3	Geology 101
AP European History			4 or 5	History - Europe LD - 242
AP US History	3	HIST 2010-2020	4 or 5	History US 221-222
AP Human Geography	3	Social Science Core Requirement	4 or 5	Geography 121
AP Statistics	3	MATH 1530	4 or 5	Statistics 201
AP Psychology	3	PSYCH 1030	3, 4 or 5	Psychology 110
AP Physics C-M	3			
	4			

AP COURSE	TEST SCORE	PELLISSIPPI CREDIT	TEST SCORE	UT KNOXVILLE CREDIT
AP Calculus AB	3	Math 1830	3	Math 125
	4	Math 1830 OR Math 1910	4	Math 141
			5	Math 147
AP Calculus BC	3	Math 1910-1920	3	Math 141
			4	Math 141-142
			5	Math 147-148
AP Music Theory	3	Music 1110		
AP Music Theory (Aural Sub-Score)			4	Music Theory 130
			5	Music Theory 130, 140
AP Music Theory (Written Sub-Score)			4	Music Theory 110
			5	Music Theory 110, 120

Elective Area of Focus

Understanding the Term

Education is filled with terms thrown around easily by teachers, counselors, and administrators. Too often, those terms have no meaning to students or parents.

The elective area of focus is one of those terms. It is a graduation requirement. Every student must have one. But what is it?

In a nutshell, a student's elective area of focus is a minimum of three credits in a single area of study (English, math, CTE, etc). In core disciplines this must be three credits beyond what is required by the state of Tennessee for graduation. In elective areas, it is simply three credits in the same discipline.

In traditional high school schedules, it is easy to decide on an elective area of focus as late as the junior year. Students have a fall semester and spring semester in which to take two credits, with a third their senior year.

At the L&N STEM Academy, it is a little more difficult to wait that late. We encourage students to decide in their sophomore year what their elective area of focus will be and stick to it.

This is an important topic for parental help. You know your child. You know what they like and don't like, what they are good at and not good at. Helping them decide on an elective area of focus, and helping them stick to it through their senior year, is a great help to our school counselors.

While not an exhaustive list, here are a few examples of what would work as an elective area of focus for students:

Math and Science

The state of Tennessee requires a single math credit each year for four years. In addition, the state requires three credits of science. An elective area of focus in math and science would be any combination of three courses beyond these initial requirements. It does not have to be all math or all science, but a combination of the two.

Humanities

The state of Tennessee requires four English credits, four Social Studies credits, and two World Language credits. An area of focus for the Humanities would be any combination of three courses from any of these three areas beyond the required credits. For a World Language credit to count, it must be beyond level 2 of the course. For our school that limits it to Latin 3 Honors and beyond.

Fine Arts

The state of Tennessee requires one credit of a Fine Art to graduate. An elective area of focus would include any three electives from the Fine Arts course selections beyond that first credit. It could be a combination of Art, Choir, Band, General Music, AP Music Theory, Development of Rock and Roll, or Digital Arts and Design

CTE

The state of Tennessee no longer requires CTE classes as a part of its graduation requirements. As a result, an elective area of focus would be any combination of classes from the same area of study within CTE.

Intervention Academic Elective

Some of our students are required to take a Study Skills class as part of their program of study. Three credits in Study Skills counts as an Intervention Academic Elective area of focus.

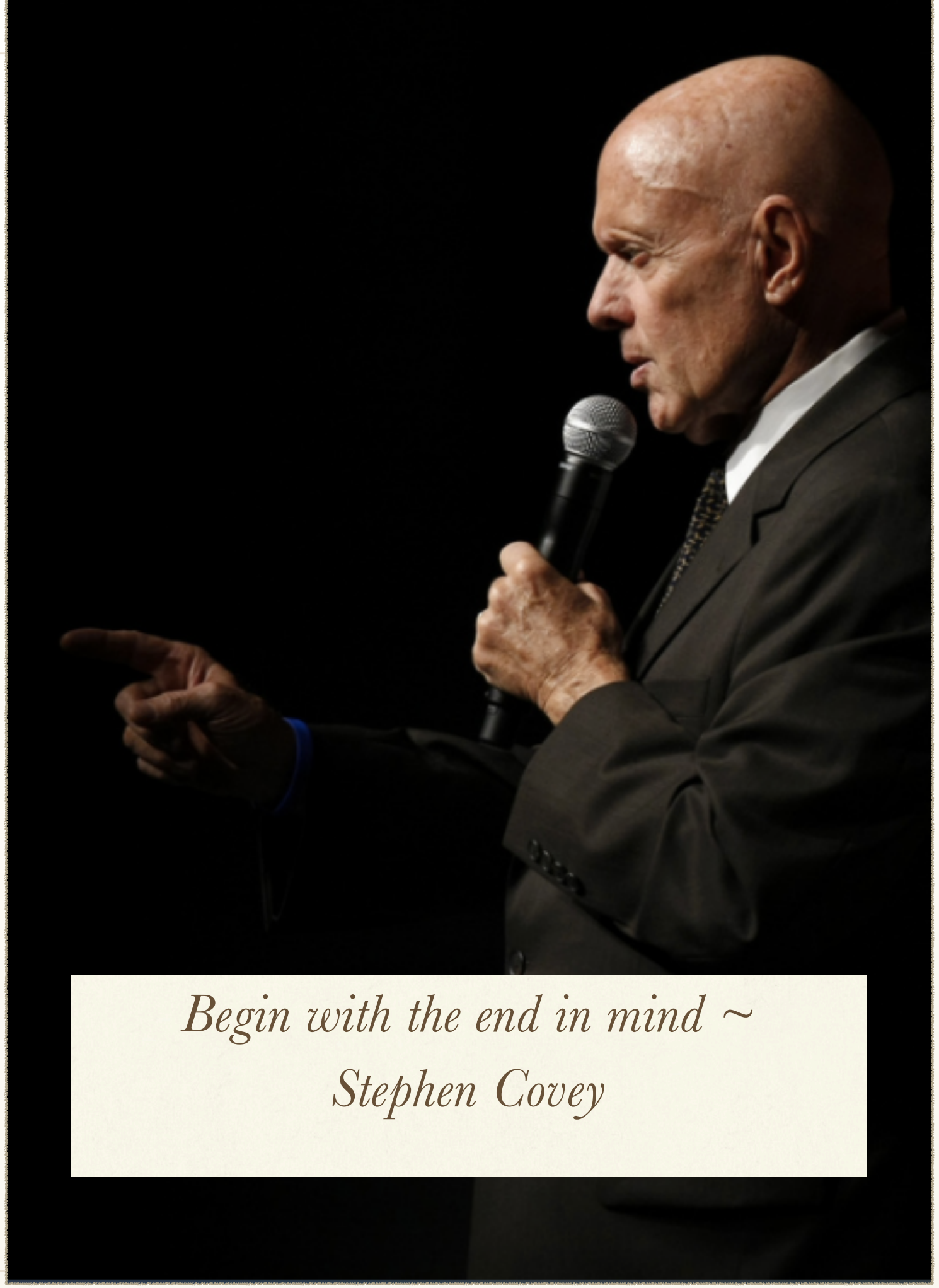
Advanced Placement (AP) and Dual Enrollment/ Credit

The L&N STEM Academy offers a wide range of AP classes for our students. In addition, many seniors take Dual Enrollment classes that count both as a high school and college level credit. We do not yet offer Dual Credit classes, but they might be added soon. Any combination of these classes, in any study area, will count as a elective area of focus. In addition, any AP course taken to satisfy a graduation requirement (AP Government is an example) also counts as an AP elective area of focus.

STEM

For our STEM elective area of focus, we offer Scientific Research 1, Scientific Problem Solving, and Scientific Modeling. An additional course counts as part of our STEM focus: AP Computer Science Principles. The successful completion of any three credits would qualify as a STEM elective area of focus.

Before You Begin



Before You Begin

As you begin the process of looking through the course catalog and finding classes that are both interesting and required for graduation, it is imperative that you have a plan.

Courses offered for tenth graders are more limited than those offered for twelfth graders, but they all lead to the same place, fulfilling the required courses for graduation and finding courses that interest you personally.

We recommend that, in addition to talking to your parents about course selections, you contact your school counselor with any questions you have about academic requirements or electives.

On your way

Once you are aware of the classes you have to take (your grade level requirements), and you begin to look at courses available in this book, here are a few things to remember:

- Look in the upper right corner of the course description. Does it include the grade in which I will be next year? All courses available to 9th graders will be highlighted in green as an easy visual marker to find classes for your schedule requests.
- Look at the very first words in bold. Is this a traditional, blended, facilitated virtual, or online class? Does that style of class work best for me? If I have a C or below in most of my classes, or I struggle to turn in work on time, I probably want to look only at traditional style classes.
- What are the prerequisites in bold at the end of the course description? Have I completed all the classes required for this course? Do I need a teacher recommendation to take it?

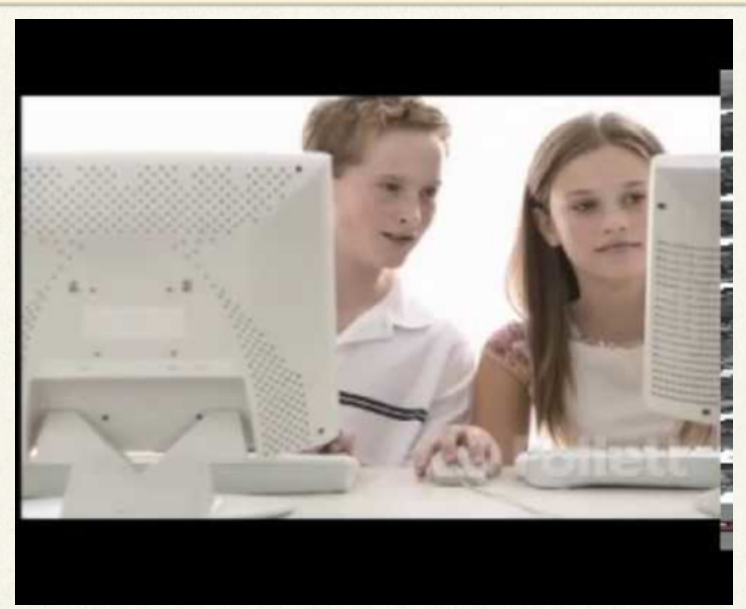
Using questions like these, you can easily eliminate classes that are either not taught in a style best suited to your learning, or require you to have completed things you have not done yet.

You're Almost Ready!

You've chosen all the classes you want to take. You've marked the ones you are required to take on the Google Doc. You've listed some classes you would like as your electives. And you have some alternates in mind in case your electives fill up or are in conflict with other classes. It is almost time to go into Aspen and start making requests. You can download step-by-step instructions from this link: But first, you should watch this video that describes the process of online course requests:

Last Minute Reminders

There are a few things to remember as you look through Aspen to choose your classes. By paying attention to them, they will help you get finished quickly and accurately.



If you choose to ignore them, you may have to see the school counselor to fix any errors you've committed before we can allow your requests to be accepted.

Here are the things you should remember:

- In some of the areas like English or Social Studies, teachers have recommended you for a course based on your grades, work ethic, and behavior. You should see the word "recommended" in one of the boxes next to the course in Aspen. In these areas you may not be able to select anything other than what was recommended. This is built into Aspen to help us guide you where you need to be.
- In some areas, like Math or Science (or other upper level courses), your teachers may have recommended you for courses, but you are not required to take them.
- There are minimum and maximum courses you can select in each area. If you do not select the minimum, your requests will be flagged, and you will need to see the school counselor to fix your requests before they can be processed.
- For many courses, like AP or Honors, you have to have a teacher recommendation for the request to be processed. If, for example, you want to take AP Calculus AB, but a teacher has not recommended you for that course, we cannot accept the recommendation. It is far easier, and faster, if you select another course to take.
- Electives and Alternates should be totally different classes. One of the mistakes many students make is choosing a class like Astronomy as an elective, then choosing it again as an Alternate. This will not work, and your requests will not be accepted. Alternates, but definition, should be classes you are comfortable taking in case the elective requests are filled or in conflict with another class. If you select the same classes for Alternates that you have listed elsewhere, your requests will not be processed until you have spoken to your school counselor and selected classes properly.
- Always, always, always ask for help if there is something you do not understand. It is better to get help and do it correctly than to do it on your own and risk getting it wrong.

Last Words

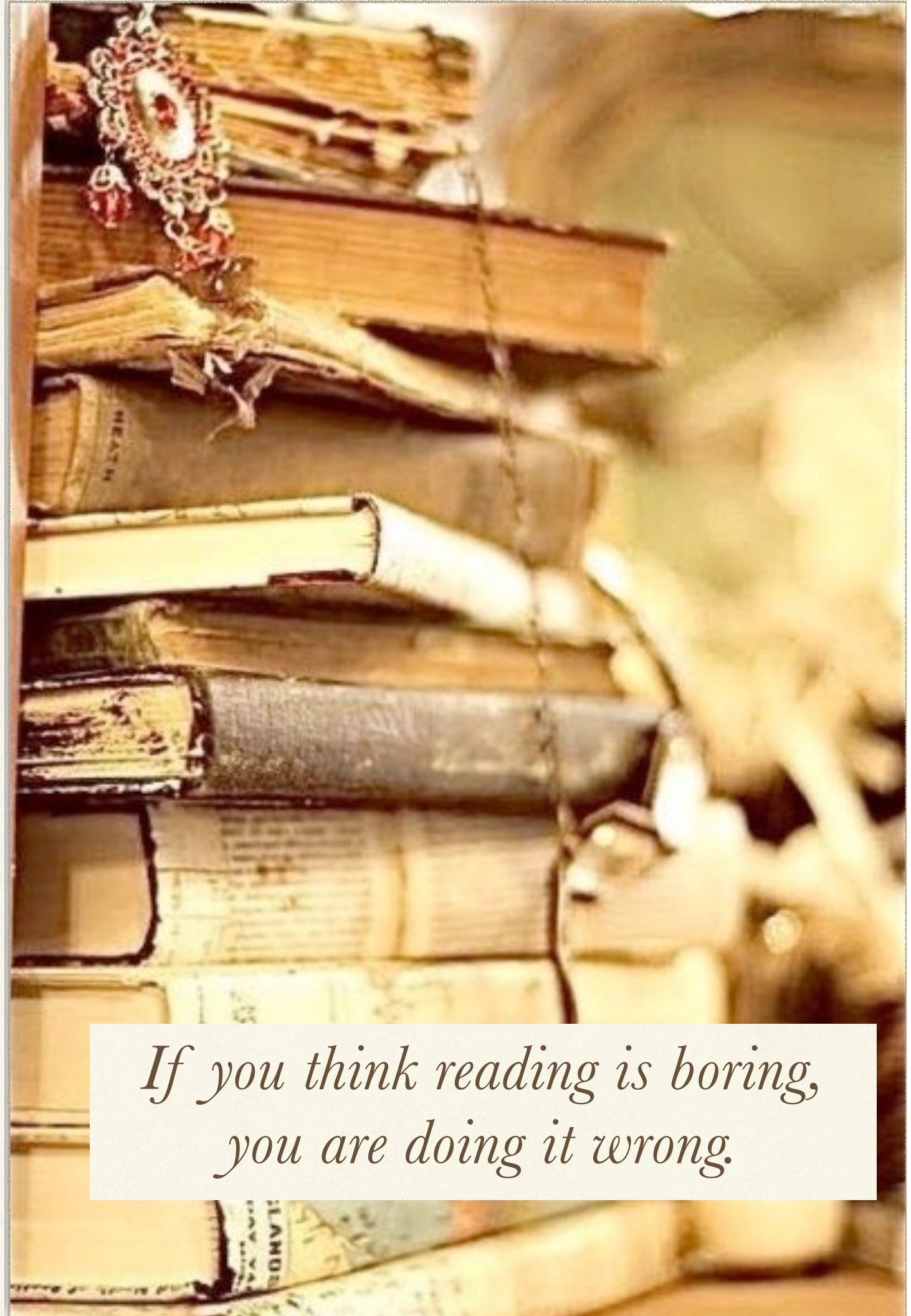
Even though you are requesting classes in the spring, schedules will not run until sometime in the summer, usually the first two weeks of July. It is an automated system that randomly assigns you to sections of English, math, science, and others.

Once the scheduler has run, your school counselors go through to see who does not have a complete schedule. We only schedule your requests automatically. Your alternates are not considered yet.

When your school counselor looks through your schedule, he or she must determine if you didn't get into a class because it was full, in conflict with another class, or another reason. Then, your schedule is completed by hand. Sometimes your counselor can make everything fit (automation is not perfect yet!). Other times, they will need to use one of your alternates to finish your schedule. This is why choosing your alternates carefully is of critical importance! Good luck!

Chapter 2

ENGLISH



English 1 Scheduling

Every incoming student is scheduled into heterogeneous sections of English 1 College Prep regardless of previous student test scores or middle school teacher recommendations.

Throughout the first quarter, 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 quarter, 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.

AP Research	**12th Grade**
Blended. AP Research allows students to deeply explore an academic topic, problem, or issue of individual interest. Through this exploration, students design, plan, and conduct a year-long research based investigation to address a research question. In the AP Research course, students further their skills acquired in the AP Seminar course by understanding research methodology; employing ethical research practices; and accessing, analyzing, and synthesizing information as they address a research question. Students explore their skill development, document their processes, and curate the artifacts of the development of their scholarly work in a portfolio. The course culminates in an academic paper of 4000–5000 words (accompanied by a performance or exhibition of product where applicable) and a presentation with an oral defense. *Summer assignments are required.* (Prerequisite: AP Seminar course and exam) (**Prerequisite: Teacher recommendation**)	
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 language 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. *Summer assignments are required.*	

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. This course is preparation for success in the Advanced Placement curriculum at the 11-12 grades. *Summer assignments are required.*	

English 3 College Prep	**11th Grade**
Traditional. This course is for students who have successfully demonstrated an average or above-average ability to perform grade-level language, analytical, composition, and reading skills. The literature component focuses on a survey of American 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. Summer assignments are required.	

AP Combined Studies	**11th Grade**
Traditional. Upon completion of Honors English II, 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. Additionally, students will study methods of argument and acquire the ability to conduct sophisticated rhetorical analysis of nonfiction texts. 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 Seminar	**11th & 12th Grade**
Traditional. 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. *Summer assignments are required.*	

English 4 College Prep	**12th Grade**
Traditional. This course is for students who have successfully on the college level. The course includes analysis of reading materials 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 Dual Enrollment	**12th Grade**
Traditional. A Senior English course for college credit. The curriculum is a composition and literary study equivalent to English Composition 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 12th grade	**12th Grade**
Traditional. A course for students who have successfully completed AP Language and Composition 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 reading is required. The course is designed to help develop the cognitive and communicative skills necessary to do well on the AP English Literature and Composition exam. Summer assignments are required. *(Prerequisite: Teacher recommendation)*	

English 1 Honors and English 2 Honors Fast Track	**9th Grade**
NEW. 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 (Fall) includes in-depth study in composition, research and literary analysis, and it requires advanced study techniques and outside readings. The English 2 Honors (Spring) curriculum is an in-depth study of critical thinking and analytical skills and includes the development of composition, literary analysis, research, and speaking skills. *Extended summer reading is required.* This course is preparation for success in AP Language and Composition. It is designed specifically for those students who wish to, and are qualified to, participate in a fast track to graduation or an Associates of Science degree upon completion of his or her high school diploma. Each class meets 4 days per week for one semester each. The pace is faster than other classes at the L&N STEM Academy. (**Prerequisites: Recommended for English 1 Honors, overall middle school GPA of 3.0 or higher, departmental and administration recommendations, teacher interview, and parent approval**)	

Genre Studies: Science Fiction	**11th & 12th Grade**
This course is for students who have an interest in the genre of science fiction. It includes units that represent prevalent themes in the genre, such as: Man and Science, Alien Encounters, and Visions of the Future. The curriculum includes projects, readings, vocabulary development, discussion, composition, and oral presentations. This is a two-block blended course, meaning it will only meet on Mondays, for two blocks. Additionally, as an upper-level English course, it is reading intensive. Students should be highly motivated. *(Elective credit)*	

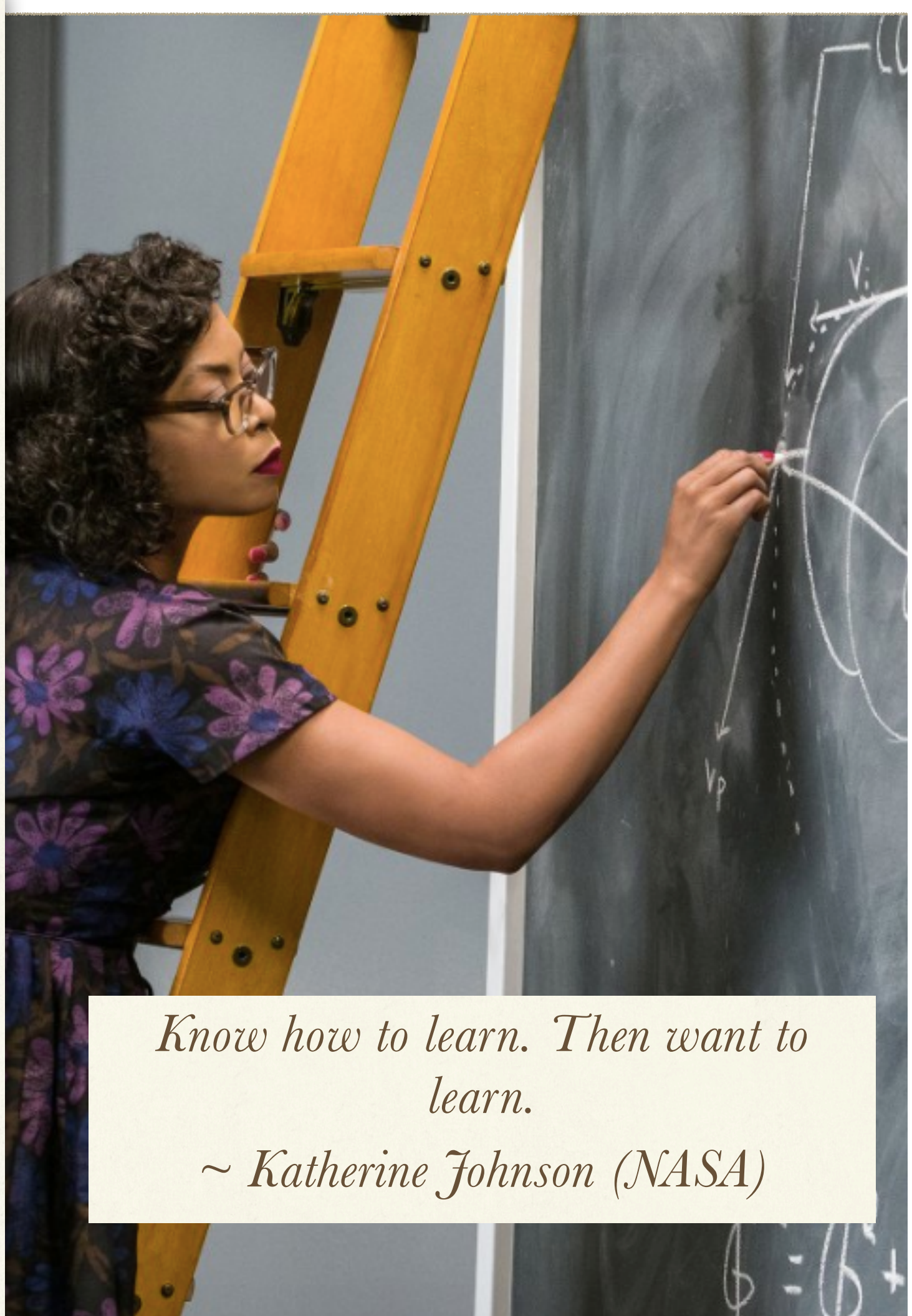
Journalism 1	**9th to 12th Grade**
Traditional. A one-unit course for students who are proficient in writing skills and have an interest in the production of publications. Curriculum includes the history and elements of journalistic style and the application of journalistic techniques to the development 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 the 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 yearbook.**)	

Journalism Advanced - News	**10th to 12th Grade**
Traditional. For students interested in broadcast 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. Projects will include regular pre-recorded school news broadcasts. (**Prerequisites: Journalism 1 or teacher recommendation. Students may have to demonstrate the ability to write well, may be required to apply for this course, and may be required to receive an English teacher recommendation.**)	

Journalism Advanced - Yearbook	**10th to 12th Grade**
Traditional. For students interested in Print Journalism, photography, and graphic design. Students 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: Journalism 1 or teacher recommendation. Students may have to demonstrate the 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



Know how to learn. Then want to learn.

~ Katherine Johnson (NASA)

Integrated Math

Beginning in the 2018-19 school year, the L&N STEM Academy will use Integrated Math 1 for incoming 9th grade students who have not completed Algebra 1 in middle school. In addition, we will use Integrated Math 2 as a replacement for Geometry. Freshmen coming into the school who have completed Algebra 1 will be placed in Integrated Math 2.

All students placed in Integrated Math 1 begin in the College Prep (CP) designation. Each student is challenged to attempt the extra depth of work required for an Honors designated credit. Once students have demonstrated the quality of work and the solid work ethic of turning assignments in on time, they may be moved from CP to Honors credit at the end of the first semester.

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 will begin to teach it this way at our school.

This approach also fits our Science course model 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.

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. *This class meets 3 days per week* (**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 Pre-Calculus Honors. *This class meets 2 days per week.* (**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.This course develops the essentials 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 course. (Prerequisite: Algebra 2 and teacher recommendation)	

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. *This class meets 3 days per week*. (**Prerequisites: Pre-Calculus Honors 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. *This class meets 4 days per week.* (**Prerequisites: Honors Precalculus and Departmental recommendation**)	
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 Python and AppInventor 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. This course can count as a math credit OR a science credit. (**Prerequisites: Algebra 1, Geometry, and teacher approval**)	

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 college 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. This course can count as a math credit OR a science credit. (**Prerequisite: Algebra 1, Geometry, and teacher approval**)	
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: English 2 CP or higher, Algebra 2 with a grade of C recommended, and Departmental recommendation**)	
Applied Mathematics College Prep	**12th Grade**
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.	

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. This class is embedded in the Integrated Math 1 CP course.

Integrated Math 2 College Prep	**10th Grade**

Traditional.This course is the second of three courses in the 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. (Prerequisite: Integrated Math 1 or Algebra 1)

Integrated Math 2 Honors	**9th Grade**

Traditional. This course is the second 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 2 CP course. Some Integrated Math 3 concepts will be introduced. (**Prerequisite: Integrated Math 1 or Algebra 1 and teacher recommendation**)

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**

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. Statistics College Prep is intended for students interested in business, social sciences, education, and data analysis. (**Prerequisite: Algebra 2 and teacher recommendation**)

Chapter 4

SCIENCE

Somewhere, something incredible is waiting to be known.

Atmospheric, Earth, and Planetary Science

Started in the 2017-2018 academic year, the Atmospheric, Earth, and Planetary Science course is the platform science class for incoming freshmen. This change has shown a better alignment 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 or Geometry CP 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 the cutoff on the placement assessment will take Chemistry Honors for their freshman year. ed in Physical World Concepts College Prep and Honors.

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**)	
AP Computer Science Principles	**10th to 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 Python and AppInventor 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. This course can count as a math credit OR a science credit. (**Prerequisites: Algebra 1, Geometry, or Integrated Math 1 and 2, and teacher approval**)	

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 college 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. This course can count as a math credit OR a science credit. (**Prerequisite: Math or Science teacher approval**)	

AP Environmental Science	**11th and 12th Grade**
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**)	

AP Physics C - Mechanics	**12th Grade**
A first year, calculus-based college level Physics course that has been audited and approved by the College Board's Advanced Placement (AP) 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: Pre-calculus and concurrent enrollment in Calculus, Physics or Honors Physics**)	

Astronomy	**10th to 12th Grade**
The goal of Astronomy is to introduce students to the concepts, theories, and laws defining the motions of the planets and the properties of the sun, moon, stars, planets and other bodies of the heavens. Students will actively observe the day and night skies; make measurements of astronomical phenomena; create projects and models; and use computers for simulations and research. (**Prerequisites: Algebra I and Geometry OR Integrated Math 1 & 2**)	

Atmospheric, Earth, and Planetary Science College Prep	**9th Grade**
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**
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 at a faster pace and cover the standards in more depth.	

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 2 Honors/AP Biology	**11th and 12th Grade**

Traditional. (**2 Credits**). 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**)

Chemistry 1 College Prep	**10th Grade**

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 or Integrated Math 1, chemistry. ninth graders placed in Chemistry 1 Honors will need to pass a placement test offered by the Science Department. (Prerequisites: Algebra 1 with eligibility for Integrated Math 2)

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. Chemistry Honors is designed to meet the needs of the more academically able student and will include a basic study of nuclear principles and organic chemistry. ninth graders placed in Chemistry 1 Honors will need to pass a placement test offered by the Science Department. (**Prerequisites: Algebra 1 with eligibility for Integrated Math 2**)

Chemistry 2 Honors/AP Chemistry	**11th to 12th Grade**

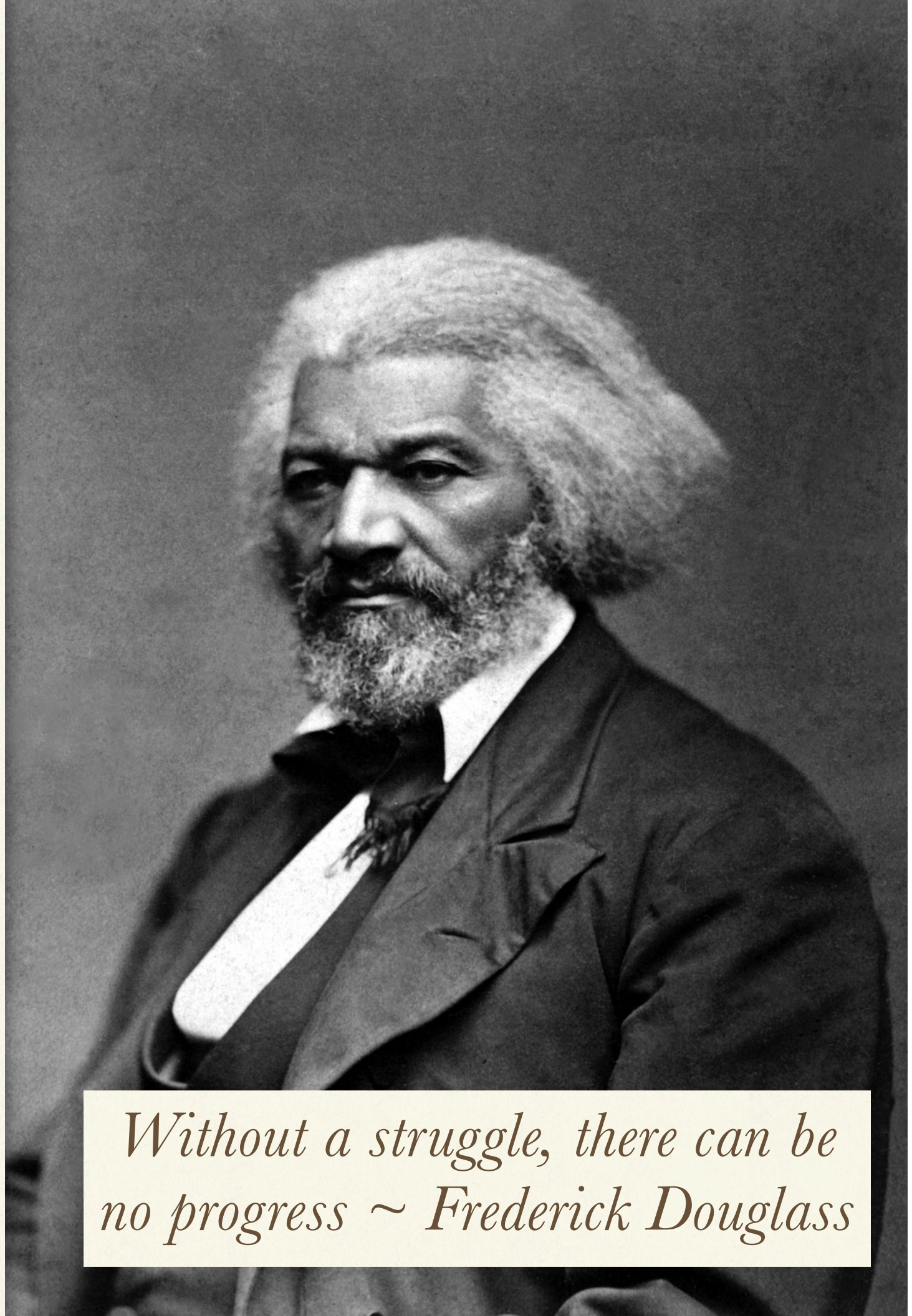
Traditional (2 Credits). Develops an understanding of the properties of matter and the interactions of matter and energy. The course includes a more in-depth study of topics introduced in Chemistry 1, such as atomic structure, quantum theory, organic chemistry, electrochemistry, kinetic molecular theory, 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 OR Integrated Math 1, 2 and 3, and teacher recommendation required. Current enrollment in Advanced Math or Calculus is strongly 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**)	
Organic/Biochemistry Honors	**11th and 12th Grade**
Traditional. Organic and Biochemistry Honors 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**)	
Physics Honors	**10th to 12th Grade**
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 or Integrated Math 1 and 2, Co-requisite Algebra 2 or Integrated Math 3. Chemistry and Biology recommended**.)	

Chemistry 1 Honors and Biology 1 Honors Combined	**9th and 10th Grade**
Traditional. This course is both Biology I Honors and Chemistry I Honors taught together as one interwoven course with a special emphasis on areas of overlap and cross cutting between the two subjects. All topics from both courses will be taught, as well as additional material to prepare students for AP Biology and AP Chemistry. Students taking this course must have the intent of taking one of those courses during their sophomore year and project to take the other during their junior or senior year. (Prerequisites: Algebra I Honors with an A/high B, Physical Science and a requisite (TBD) score on the school placement test.)	

Chapter 5

SOCIAL STUDIES



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

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 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**)	

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 Psychology	11th and 12th Grade
Traditional. The AP psychology course is an equivalent to an introductory college level psychology course. The purpose of the AP course in Psychology is to introduce the systematic and scientific study of the behavior and mental processes of human beings and other animals. Included is a consideration of the psychological facts, principles, and phenomena associated with each of the major subfields within psychology. Students also learn about the ethics and methods psychologists use in their science and practice. **Taken in 11-12 grade. (Prerequisite: Teacher recommendation**)	

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**)	

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*.	

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	**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.*	
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**)	

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 impacted 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.

US Government and Civics	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. Taken with Contemporary Issues.

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.

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.

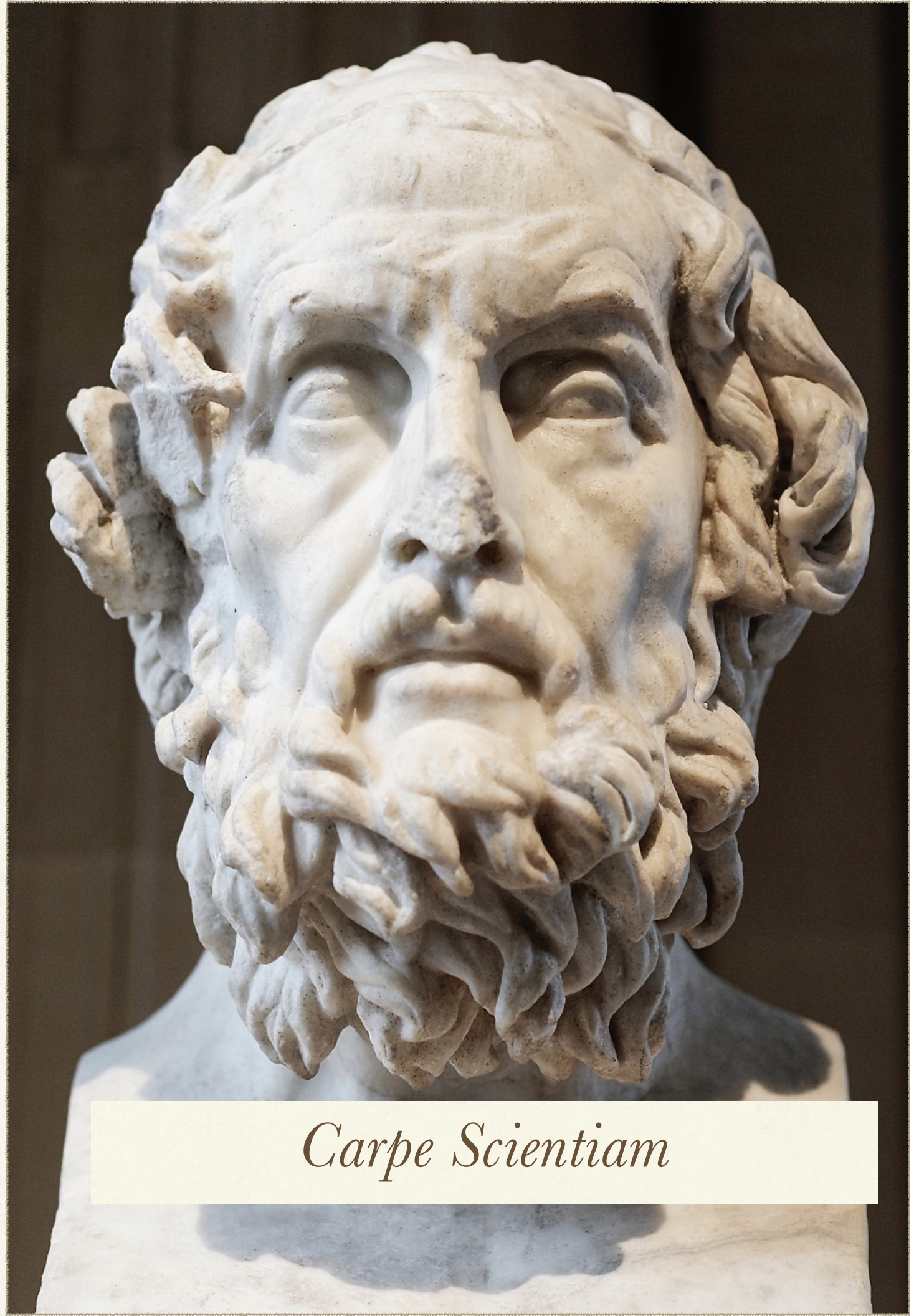
World History and Geography Honors	9th Grade

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 World History College Prep.*

African American History	**11th and 12th Grade**
Traditional. 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.	

Chapter 6

WORLD LANGUAGES



Carpe Scientiam

AP Latin Vergil and Caesar — **11th and 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 Gallic*o. 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. (**Prerequisite: Teacher recommendation**)

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 College Prep — **9th and 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.

Latin 2 College Prep — **10th and 11th Grade**

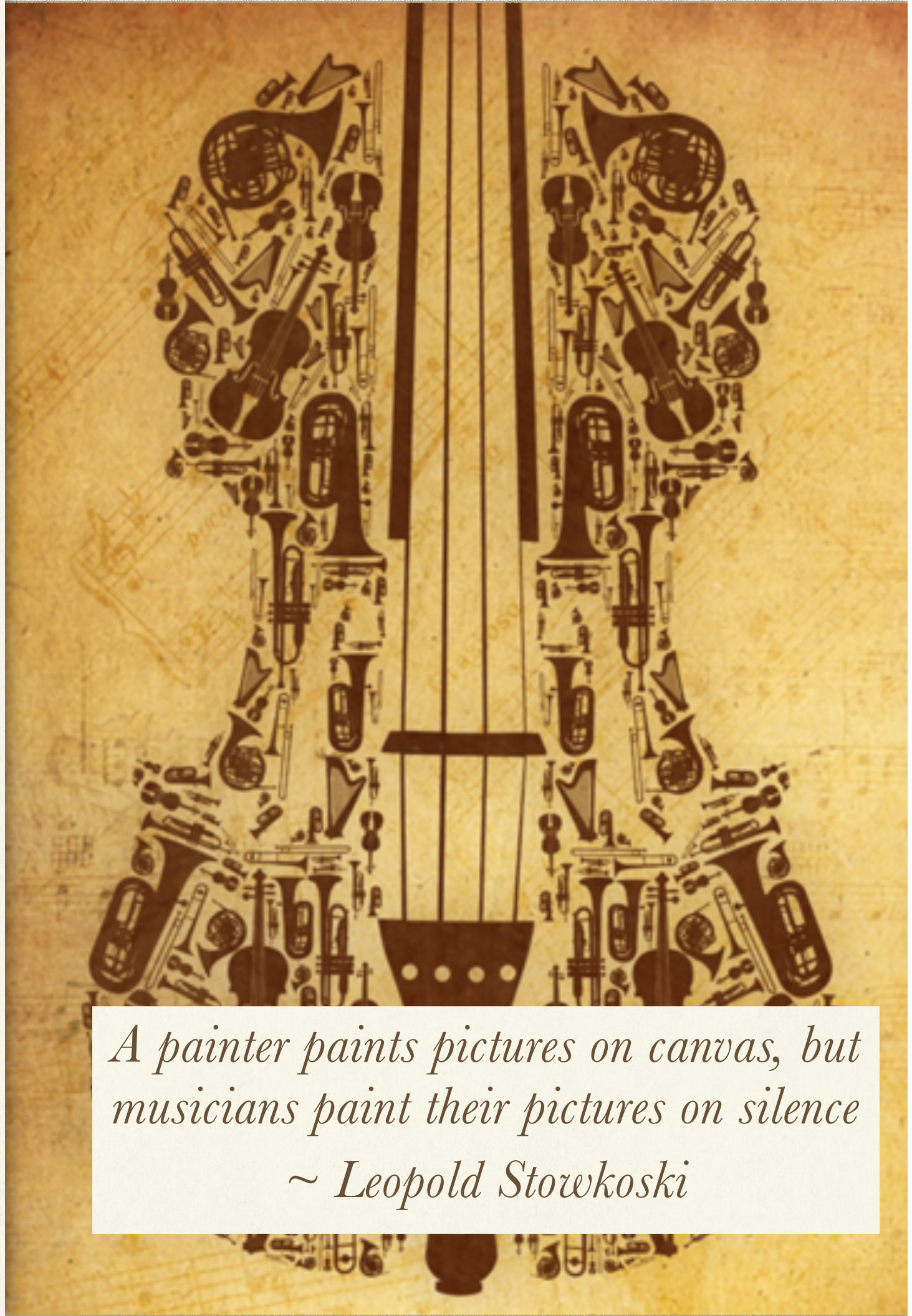
Blended. For students who are interested in more deeply developing the skills learned in the first level, the Latin II curriculum includes further study of Latin grammar, vocabulary, and the history and culture of the Romans. Students who have successfully completed Level 1, or who have demonstrated proficiency as determined through a language proficiency test or through teacher recommendations, are eligible to take this course. 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.

Latin 2 Honors	**10th and 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. Honors student work independently at their own pace in or outside of class.	
Latin 3 Honors	**11th and 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 and 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**)	

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. (**Prerequisites: Mandarin Chinese 1 and teacher recommendation**)	
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.	

Chapter 7

FINE ARTS



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

~ Leopold Stowkoski

Fine Arts: General Music

AP Music Theory — 9th to 12th Grade

Traditional. The AP Music Theory course corresponds to two semesters of a typical introductory college music theory course that covers topics such as musicianship, theory, musical materials, and procedures. Musicianship skills including dictation and other listening skills, sight-singing, and keyboard harmony are considered an important part of the course. Through the course, students develop the ability to recognize, understand, and describe basic materials and processes of music that are heard or presented in a score. Development of aural skills is a primary objective. Performance is also part of the learning process. Students understand basic concepts and terminology by listening to and performing a wide variety of music. Notational skills, speed, and fluency with basic materials are emphasized. Students who enroll in AP Music Theory are expected to also participate in a performance ensemble if possible, in order to help emphasize the course content. (**Prerequisite: Teacher recommendation**)

Development of Rock and Roll — 9th to 12th Grade

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. *Can satisfy the Fine Art credit requirement for graduation.*

Digital Music Production (General Music) — 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*.

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.

Concert Band Honors: Woodwinds and Brass	**9th to 12th Grade**

Traditional. Students who are enrolled in Honors Concert Band will be required to perform and audition in a number of musical areas. Requirements for the successful completion of the honors component will include playing all 12 major scales the full range of your instrument, the chromatic scale, participation in KCS Honors Band, auditioning and participating in All-State East/All-State Band (if selected), and additional performances/tests as given by the director. Enrolled students should expect to be utilized as leaders for their respective sections, and as such must be musically prepared to lead by example in every rehearsal.

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.

Percussion Ensemble Honors	**9th to 12th Grade**

Traditional. Students who are enrolled in Percussion Ensemble Honors will be required to perform and audition in a number of musical areas. Requirements for the successful completion of the honors component will include playing all 12 major scales on a mallet instrument, playing selected snare drum rudiments, tuning and performing on timpani, participation in KCS Honors Band, auditioning and participating in All-State East/All-State Band (if selected), and additional performances/tests as instructed by the director. Enrolled students should expect to be utilized as leaders in Percussion Ensemble, and as such must be musically prepared to lead by example in every rehearsal.

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**)	

Fine Arts: Visual

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. (**Prerequisites: 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. (**Prerequisites: 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**)	
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. (**Prerequisites: A/B in Honors Art and teacher recommendation**)	

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. Students may continue in Advanced Art on a space-available basis and may repeat yearly at the determination of the instructor. Recommended for those planning on taking AP Studio Art 2D or 3D.	
Art Honors	**11th to 12th Grade**
Traditional. Traditional. Honors Art is for students who are just starting the AP portfolio or for students who 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**)	

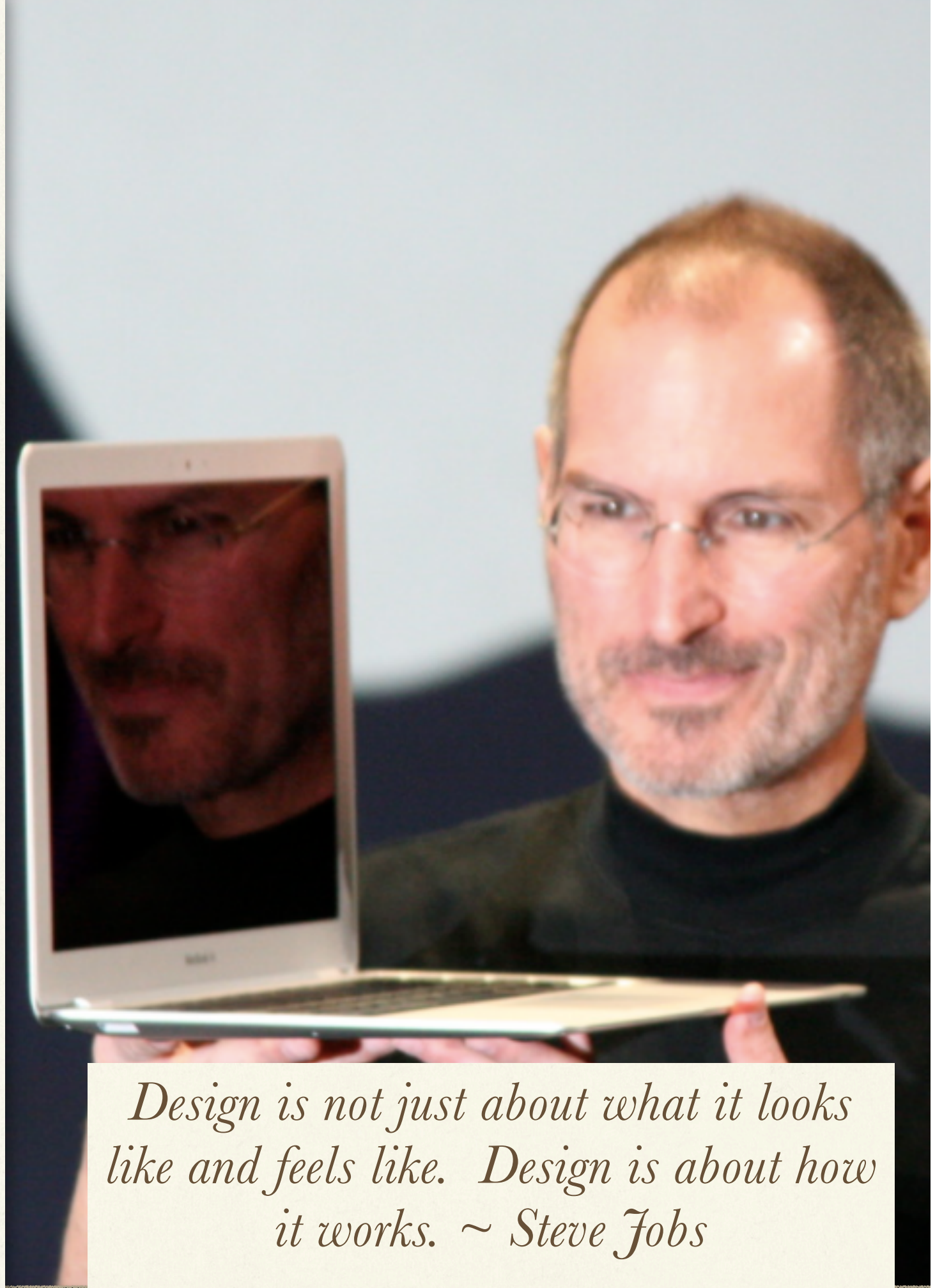
Advanced Art General	**10th to 12th Grade**
Traditional. This course is for students who have successfully completed Art I and who, in the judgment of the instructor, show a sufficient level of interest and/or ability that would warrant continued study in Visual Art. Students may continue in Advanced Art on a space-available basis and may repeat yearly at the determination of the instructor. Recommended for those planning on taking AP Studio Art 2D or 3D. (**Prerequisite: A/B in Art I and teacher recommendation.**)	
Advanced Art Drawing	**9th 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. Students may continue in Advanced Art on a space-available basis and may repeat yearly at the determination of the instructor. Recommended for those planning on taking AP Studio Art Drawing. (**Prerequisite: A/B in Art I and teacher recommendation.**)	

Fine Arts: Vocal Music

L&N Ensemble	**10th to 12th Grade**
Traditional. L&N Ensemble is an advanced choir. Students must pass an audition in March and be recommended by the choir director. Ensemble performs in two major school concerts (Winter and Spring) in addition to many small events throughout the school year. Additionally, students perform in the Knox County Showcase and the Vocal Association Festival in the Spring. Students are required to wear a specific outfit determined by the director. (**Prerequisites: Vocal Music 1, audition, and teacher recommendation**)	
L&N Ensemble Honors	**9th to 12th Grade**
Traditional. Ensemble Honors is offered to students who have already taken at least one full year of chorus at the L&N STEM Academy. These students must pass an audition in March and be recommended by the director. They will meet, rehearse and perform with L&N Ensemble. Honors requirements include but are not limited to auditioning for All East Choirs and completing a year long research project. Students are required to wear a specific outfit determined by the director. (**Prerequisites: Vocal Music 1, audition, and teacher recommendation**)	

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 Concentration

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 focuses on visual, conceptual, and technical design skills used in the digital publishing of computer graphics, motion graphics, film and video, and animation. Emphasis will be placed 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**)	

Digital Arts and Design 3	**11th to 12th Grade**
Traditional. In this course students develop understanding of digital design principles and application of the "Integrated Design Process" as a means of strategic communication. Students will develop skills to interface the creative process, technologies and business objectives to communicate with targeted audiences. Students will develop problem solving skills and creative thinking (analytical and intuitive) related to digital design and an array of original designs for print and online applications that leverage technologies and software applications such as...Adobe Creative Suite, Macromedia's Dream- weaver, Flash and Fireworks to achieve effective communications. (**Prerequisites: Digital Arts and Design 2 and teacher recommendation**)	

Advanced Animation and Simulation Honors	**11th and 12th Grade**

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-polyon 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 inquires 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**).

Introduction to Animation and Simulation Honors	**10th to 12th Grade**

Blended. 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 links 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 is multi-faceted and essential to the industries. The focus of the class will be on developing understandings of 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. (**Prerequisite: Digital Arts and Design 1 or teacher recommendation**).

Networking Systems Concentration

Computer Systems	**9th to 12th Grade**

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 Information Technology (IT) industry standard credential, CompTIA's A+ certification. (**Prerequisite: Algebra 1 or Integrated Math 1**)

Computer Science Foundations	**9th to 12th Grade**

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 this 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.**

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**)

CyberSecurity	**10th to 12th Grade**

Traditional. Cybersecurity I is a course intended to teach students the basic concepts of cybersecurity. The course places an emphasis on security integration, application of cybersecurity practices and devices, ethics, and best practices management. The fundamental skills in this course cover both in house and external threats to network security and design, how to enforce network level security policies, and how to safeguard an organization's information. Upon completion of this course, proficient students will be demonstrate and understanding of cybersecurity concepts, identify fundamental principles of networking systems, understand network infrastructure and network security, and be able to demonstrate how to implement various aspects of security within a networking system.

Web Design Concentration

Web Design 1: Foundations	**9th to 12th Grade**

Traditional. Web Design Foundations is a course that prepares students with work-related web design and development skills for advancement into postsecondary education and industry. The course is intended to develop fundamental skills in both theory and practical application of the web design and development process, project management and teamwork, troubleshooting and problem solving, and interpersonal skill development. Students will work with HTML 5 and CSS3 to design and develop dynamic websites. Additionally, students will be introduced to cutting-edge tools in web design and development. The course is taught in a hands-on laboratory environment with experiences that simulate those found in the web design and development industry. Upon completion of this course, students will be prepared for more advanced coursework in the Web Design program of study. (**Prerequisite: Computer Science Foundations**)

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 concepts learned in Web Design Foundations to design sites with complex dynamic content. As students work toward this goal, they acquire key skills in coding HTML 5, CSS3, Javascript, project management, 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, 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 Concentration

Web Design Practicum	**11th or 12th Grade**

Traditional. 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. In addition to developing an understanding of the professional and ethical issues encountered by web design professionals in the workplace, 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, Web Site Designer, and teacher recommendation**)

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 students 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**
Blended. 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.(**Prerequisite: Physical Education 1 and teacher recommendation**)	

Extra Curricular Activities That Substitute for a PE Credit
Bowling
Cross Country
Diving
Golf
Swimming
Tennis
Track and Field