L&N STEM Academy

COURSE CATALOG

2019-2020

Chapter 1

GENERAL OVERVIEW

General Information

ADMINISTRATION
Becky Ashe, Founding Principal Jennifer Garrett, Assistant Principal Steven York, Assistant Principal
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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

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 choose to acknowledge an enlarged view of 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. 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 “why” is that we believe the world needs more thinkers and designers. Our courses of study are developed to meet TN graduation requirements while equipping students to become those thinkers and designers, no matter what their vocation.

Tennessee Department of Education Graduation Requirements

Students must be enrolled in a math class all 4 years plus earn one credit past Algebra 2
Integrated 1, 2, and 3 replaced Algebra I, Geometry, and Algebra 2 in graduation requirements

May earn PE credit by participating in a school-sponsored athletic team

Elective Focus classes are like a high school "major". They are 3 courses in an area of study in addition to the required ones already listed

All students take the ACT in-school as Juniors
All students take the Civics assessment in their Government class as sophomores

GRADUATION REQUIREMENTS

CORE SUBJECTS	TOTAL CREDITS
English: English I, II, III, IV	4
Mathematics: Algebra I, Geometry, Algebra II, one high level math	4
Science: Biology, Chemistry or Physics, one additional Lab science	3
Social Studies: World History and Geography or AP Human Geography	1
US History and Geography	1
US Government and Civics	½
Economics	½
Physical Education	½
Lifetime Wellness	1
Personal Finance	½
Elective Focus	3
University Admissions Students must complete two units of the same world language and one unit of fine/performing arts in order to meet college/university admission requirements	3
Additional Elective Credits	6
TOTAL	28
All students are required to take the ACT or SAT to meet graduation requirements.	
A Civics test and a project-based Civics assessment are also graduation requirements.	

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

Knox County Schools Graduation Requirements

Like the state requirements, there are 28 credits required to graduate. But the makeup of those varies slightly.

Fine Arts and Foreign Language requirements (listed under "university admissions" on the state table) may be waived and 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.

Elective Focus must be in one of seven areas:

L&N Focus Areas:	Additional/optional if needed:
Science and/or Math	Humanities
STEM	Fine Arts
Technology (CTE)	Human Services
Advanced Placement (AP)	

STEM	Three elective credits earned in either STEM courses (special course designations) or a combination of three additional elective credits in Science, Technology, and/or Math courses where a significant portion (more than 25%) of the course is based on original inquiry and design. Scientific Problem Solving, Scientific Research, and Scientific Modeling meet this focus.
MATH AND SCIENCE	Any combination of three Math and/or Science electives in addition to the required math and science courses
TECHNOLOGY (CTE)	Any combination of three units in the same Program of Studies
HUMANITIES	Any combination of courses in English/Language Arts, World Languages (above Level 2 if completing University Admissions requirement), and Social Studies, above the core requirements
FINE ARTS	Any combination of courses in Visual and/or Performing Arts, Theatre and Dance above the core requirements for University Admissions.
ADVANCED PLACEMENT (AP)	Any combination of three of the same type course (i.e. 3 AP courses). AP courses may be used to satisfy core requirements and the elective focus requirement (i.e. AP US History may satisfy core requirements and may count as one course in an AP Elective Focus.) Students using The AP courses to satisfy both core and elective focus requirements must still earn minimum 28 credits to graduate
HUMAN SERVICES	Any combination of courses in Peer Tutoring, Leadership, and ACTS.

ELECTIVE FOCUS –

AS DEFINED BY KCS SCHOOL BOARD

A three (3) credit Elective Focus is a graduation requirement. These courses are taken over and above the state's required courses for graduation.

The L&N STEM Academy has developed course offerings that most directly lead to these 7 Elective Focus options. When needed, counselors will work with students to explore more personalized pathways to an elective focus not listed here.

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	Integrated Math 3 CP or 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	Honors World History Or AP Human Geography	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

What are 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, attendance is not optional.

In recognition of students getting their "job" done, 10th – 12th graders only may request a permission form that allows them, with parental permission, to arrive at school late or leave early when they have Digital Labs scheduled with no class in between. Students must have no grade below a 75% ("C") on the preceding reporting period grades. Standings are checked every 4.5 weeks. Students may earn back the privilege with permission when all grades are brought back up above "C".

Students are encouraged to consult with parents, teachers, counselors, and departmental course progressions when planning their four years of study towards graduation.

Students should consult graduation requirements and consider potential colleges, majors, and after high school plans when requesting courses.

The table to the right shows all electives proposed for 2019-20 school year. Classes which do not receive a minimum number of requests will be considered for offering in future years. This list does not include graduation required courses.

Elective Options for 2019-2020 School Year

English
Journalism I (9-12)
Yearbook (10-12)
Ancient Literature, Virgil and Caesar (11,12)

AP Capstone
AP Seminar (10-12)
AP Research (11,12)

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

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

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

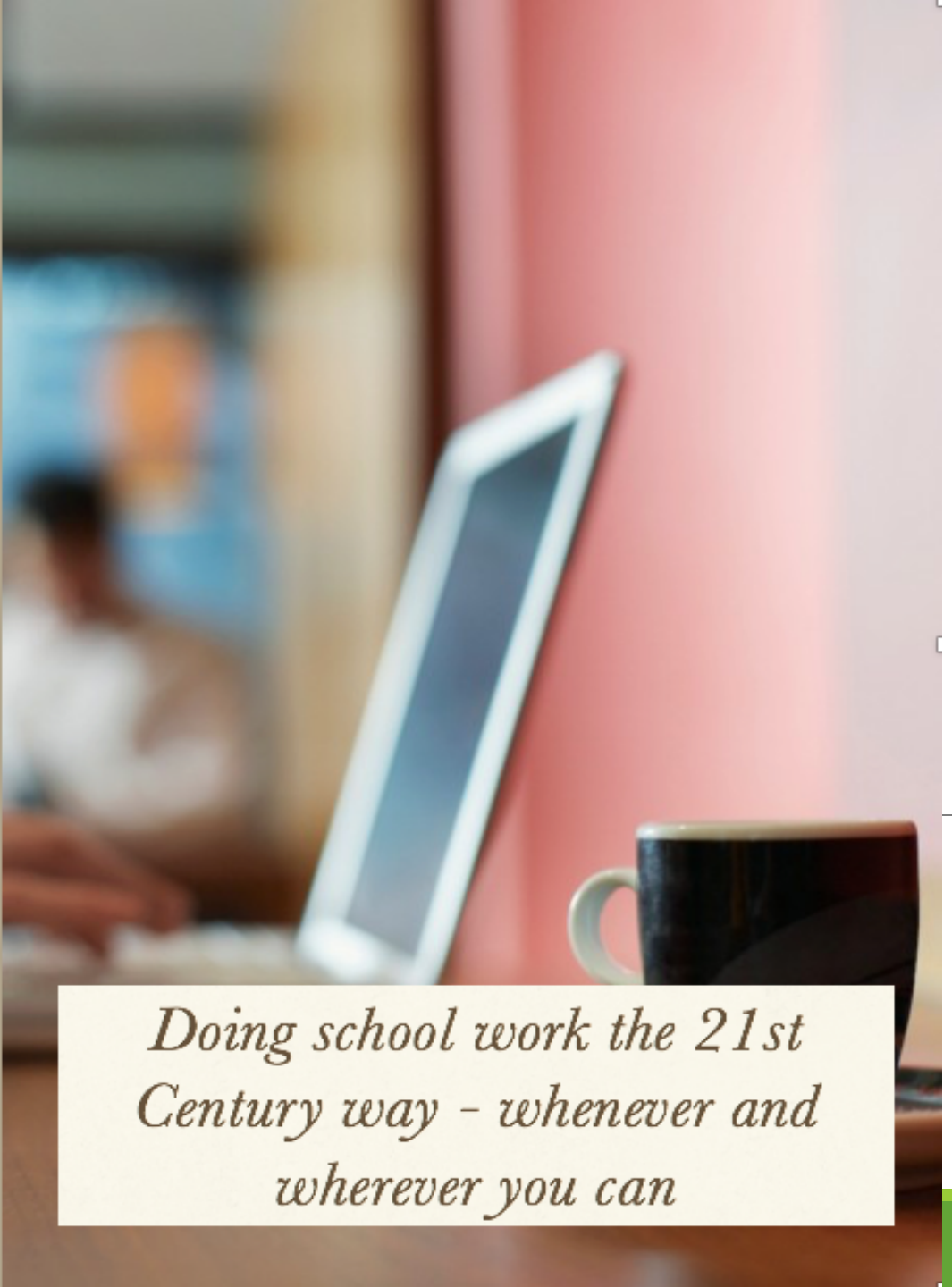
World Languages
Latin 3, Honors (11,12)
Latin 4, Honors (11,12)
AP Latin Vergil and Caesar (11,12)
Mandarin Chinese I (9-12)
Mandarin Chinese II (10-12)
Mandarin Chinese III & IV (10-12)

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

Career & Technical
Digital Arts and Design I (9-12)
Digital Arts and Design II (10-12)
Digital Arts and Design III (10-12)
Introduction to Animation and Simulation (10-12)
Advanced Animation and Simulation (11,12)
Web Design Foundations 1 (9-12)
Web Design Foundations II: Site Designer (10-12)
Web Design Foundations III: Practicum (11,12)
Computer Science Foundations (9-12)
Cybersecurity (10-12)
Computer Systems (10-12)
Principles of Flight: Aviation I (10 - 12)

General Electives
Driver's Education (10-12)
Introduction to Philosophy: Humanities (10-12)
Dual Enrollment (11,12)
Peer Tutoring (11,12)
Advanced PE (11,12)

Design Thinking
Scientific Research (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 (Quest Distance Learning). 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 through Knox County's Quest Distance learning program. 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 (Quest) 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; but that teacher may not be on the staff of the L&N.

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. 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/Quest
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

Genius Hour


Failure is simply the opportunity to be-
gin 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 per- cent 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 ran*ge of innovations including training tools for other branches."

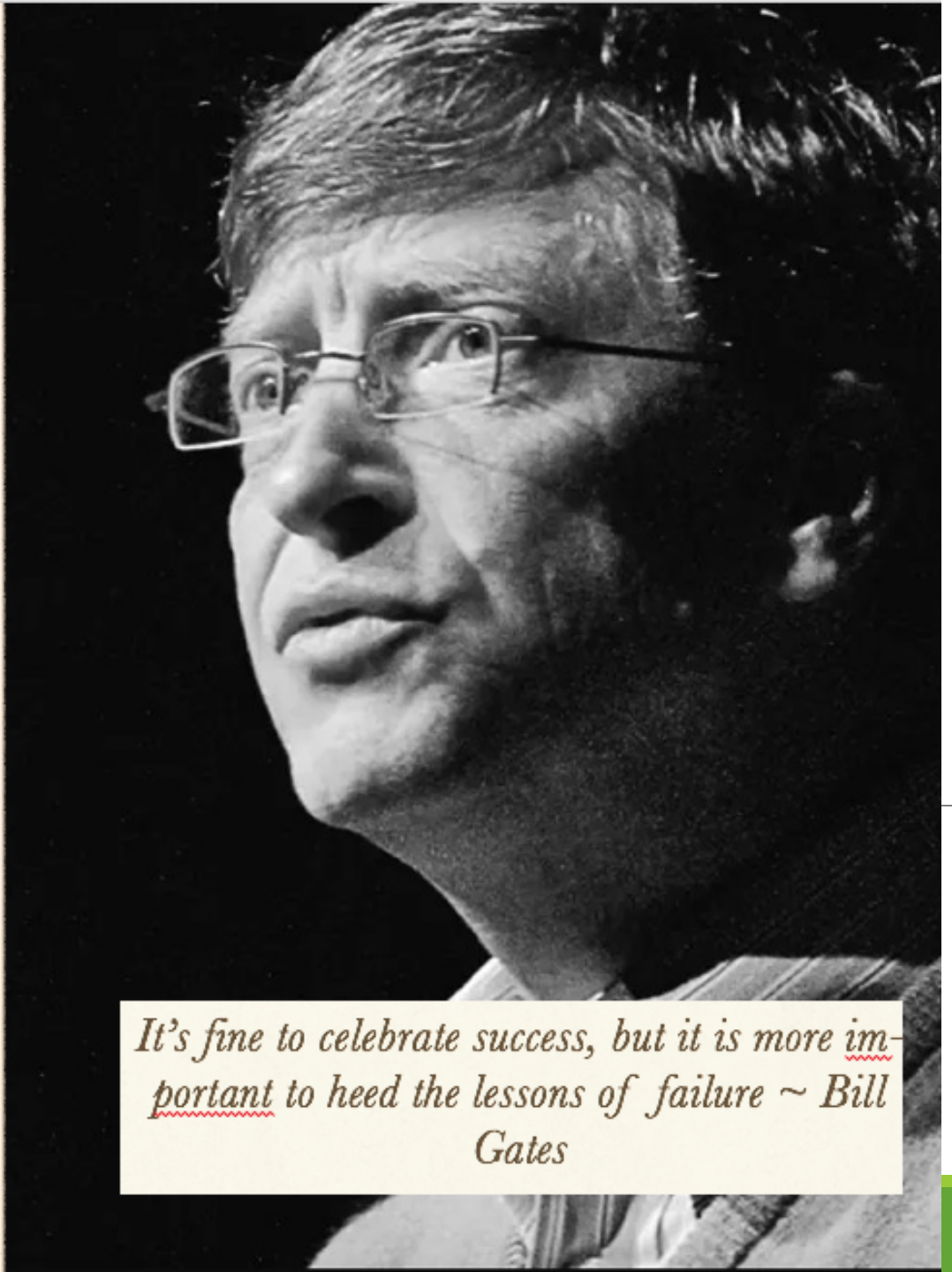
Genius Hour in Education

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.

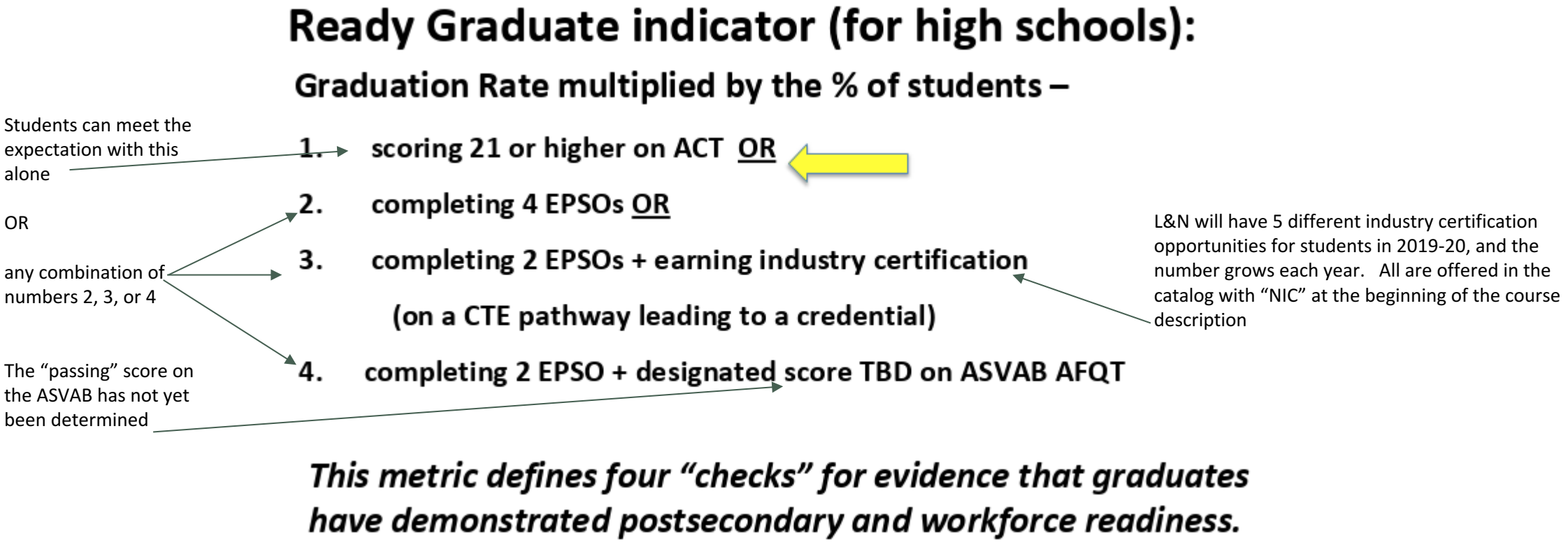


Early Post-Secondary Opportunities (EPSOs)

AP, Dual Enrollment, Industry Certifications, ACT & ASVAB

EPSO's

What are EPSO's? Recently, the TN Department of Education supported former Governor Bill Haslam's initiative, *Drive to 55*, which aims for TN to have an educated workforce. EPSOs, or Early Post-Secondary Opportunities, are a cornerstone to assuring high school graduates leave twelfth grade with the skills to succeed in college or the workforce. They are a menu of options schools have to show that students are "ready graduates".



In the catalog following, classes that count as "EPSOs" are indicated with a yellow band in the upper left corner box description.

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. Students who take the course but do *not* take the exam will ***not*** receive the rigor points added to their final average. They will still receive the weighted grade in calculating GPA (i.e., A = 5 points, B = 4 points, etc.).

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.

AP Courses also count as "EPSO's" so each one contributes to the required 4 EPSOs expected for graduation.

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 to department.

In most cases, we are looking for students who have already completed an Honors level course with a B or higher. In addition, we have found that successful students are those who are self-managing and will consistently set aside time for the amount of work required outside school hours to achieve in the class. We encourage students to push themselves to these highly demanding courses for the exposure to the level of effort and work that will be required in most any post-high school pursuit.

On the pages following you will find details about the average student's work load to be expected for each AP course offered at the L&N; and the current scores accepted along with the credit awarded at regional post-secondary schools.

L&N AP COURSE EXPECTATIONS

Course	Grade Level	Amount of Reading per Week	Outside of Class Time expected	Summer Assignments
SCIENCE AND MATHEMATICS				
AP Biology	10 – 12	30 – 40 pages	3 – 5 hours	Yes
AP Chemistry	10 – 12	30 – 50 pages	6 – 8 hours	Yes
AP Computer Principles	10 – 12	30 – 40 pages	6 – 7 hours	Yes
AP Computer Science	11 – 12	30 pages	2 – 3 hours	No
AP Environmental Science	11 – 12	20 – 30 pages	3 – 5 hours	Yes
AP Physics I	11 – 12	30 pages	3 – 5 hours	No
AP Calculus AB/BC	11 – 12	NA	3 – 5 hours	Yes
AP Statistics	11 – 12	20 – 40 pages	3 – 5 hours	Yes
FINE ARTS				
AP Art Studio	11 – 12	Portfolio and Sketchbook	2 – 4 hours	Yes
AP Music Theory	11 – 12	10 – 20 pages	3 – 5 hours	Yes

L&N AP COURSE EXPECTATIONS

Course	Grade Level	Amount of Reading per Week	Outside of Class Time expected	Summer Assignments
HUMANITIES				
AP Combined Studies (US History and English Language and Composition)	11	60 – 80 pages	6 – 8 hours	Yes, both English and History separately
English Literature and Composition	12	60 – 120 pages (fiction and poetry)	3 – 5 hours	Yes
AP US Government	10	30 – 60 pages	3 – 5 hours	Yes
AP European History	10 – 12	20 – 50 pages	3 – 4 hours	Yes
AP Psychology	11 – 12	40 pages	3 – 5 hours	No
AP Human Geography	9	30 – 60 pages	3 – 5 hours	Yes
AP Comparative Politics	11 – 12	30 – 50 pages	3 – 5 hours	Yes
AP Latin Vergil (to be taken concurrent with Ancient Literature)	12	20 – 40 pages	2 – 4 hours	Yes
AP Seminar	10 – 12	20 – 50 pages	3 – 4 hours	Yes
AP Research	11 – 12	30 – 60 pages	4 – 5 hours	Yes

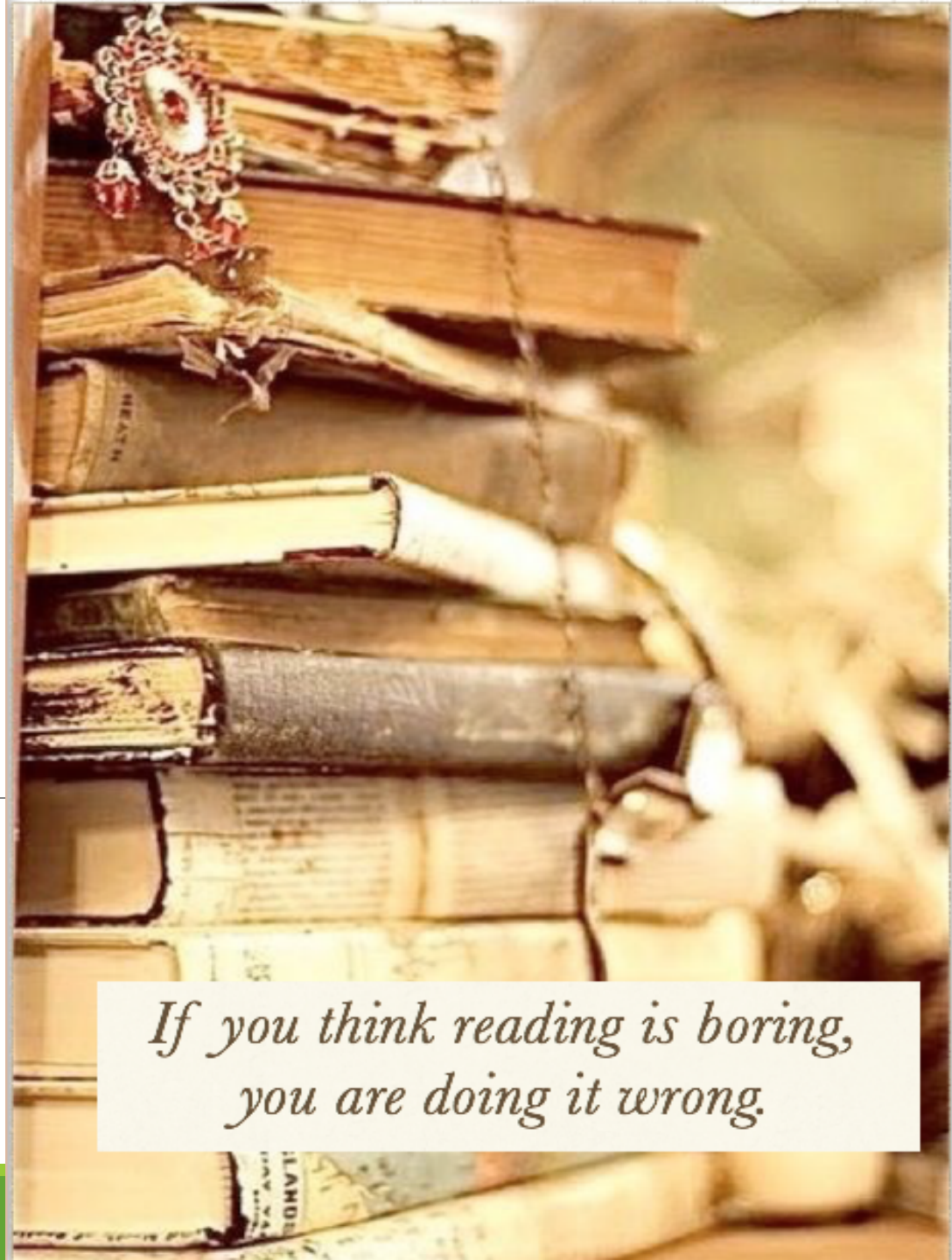
AP COURSE	TEST SCORE	PELLISSIPPI CREDIT	TEST SCORE	UT KNOXVILLE CREDIT
AP Studio Art	3	ARTH 2010	4 or 5	Art LD
AP Studio Art 2-D	3	ARTP 1010	4 or 5	Art LD
AP Studio Art 3-D	3	ARTP 1020	4 or 5	Art LD
AP Biology	3	BIOL 1010 or 1020	3	Biology 101
	4	BIOL 1010/1020 or 1110/1120	4	Biology 101-102
			5	Biology 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

We currently offer Industry Certification testing in:
Computer Systems Foundations (CompTIA fundamentals)
Computer Systems (CompTIA A+, Cisco Certified Entry)
Web Site Development (CIW Web Design Specialist)

Chapter 2

ENGLISH



English I and II Scheduling

The traditional scheduling methods for College Prep and Honors classes has been to put classes in the schedule as distinctly different sections with College Prep students grouped together and Honors students grouped separately. Once students were placed, there has been little possibility of changing that status. While not an inherently bad way to schedule, we feel we can do better by our students. As a result, we have developed a new way of scheduling College Prep and Honors classes. We schedule every student in heterogeneous sections of English I and English II College Prep regardless of previous student test scores or teacher recommendations.

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

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

By rethinking the traditional scheduling methods, we feel the quality of work will improve for every student.

English I College Prep and Honors	9th grade
CP: 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 assignments are required*. ***Honors:*** **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 the 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 assignments are required*.	

English 2 College Prep and Honors	**10th grade**
CP: 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 critical thinking, literary analysis, vocabulary development, and composition. *Summer assignments are required*. ***Honors:*** **Traditional**. For students who have demonstrated a mastery of grammar, writing, and reading skills in the English 1 standard College Prep or Honors level. Students must have motivation and desire to participate in this program. 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 average or above average grade-level language, analysis, composition, discussion and reading skills. The literature component focuses on a range 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, discussion and research skills in preparation for college English. *Summer assignments are required*.	

AP Combined Studies	**11th grade**
Traditional. Upon completion of Honors English II, and 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 acquire the ability to conduct sophisticated rhetorical analysis of nonfiction texts and to compose well-written and well-argued texts of their own. 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**)	

English 4 College Prep	**12th 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 British and 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. *Summer assignments are required.*	

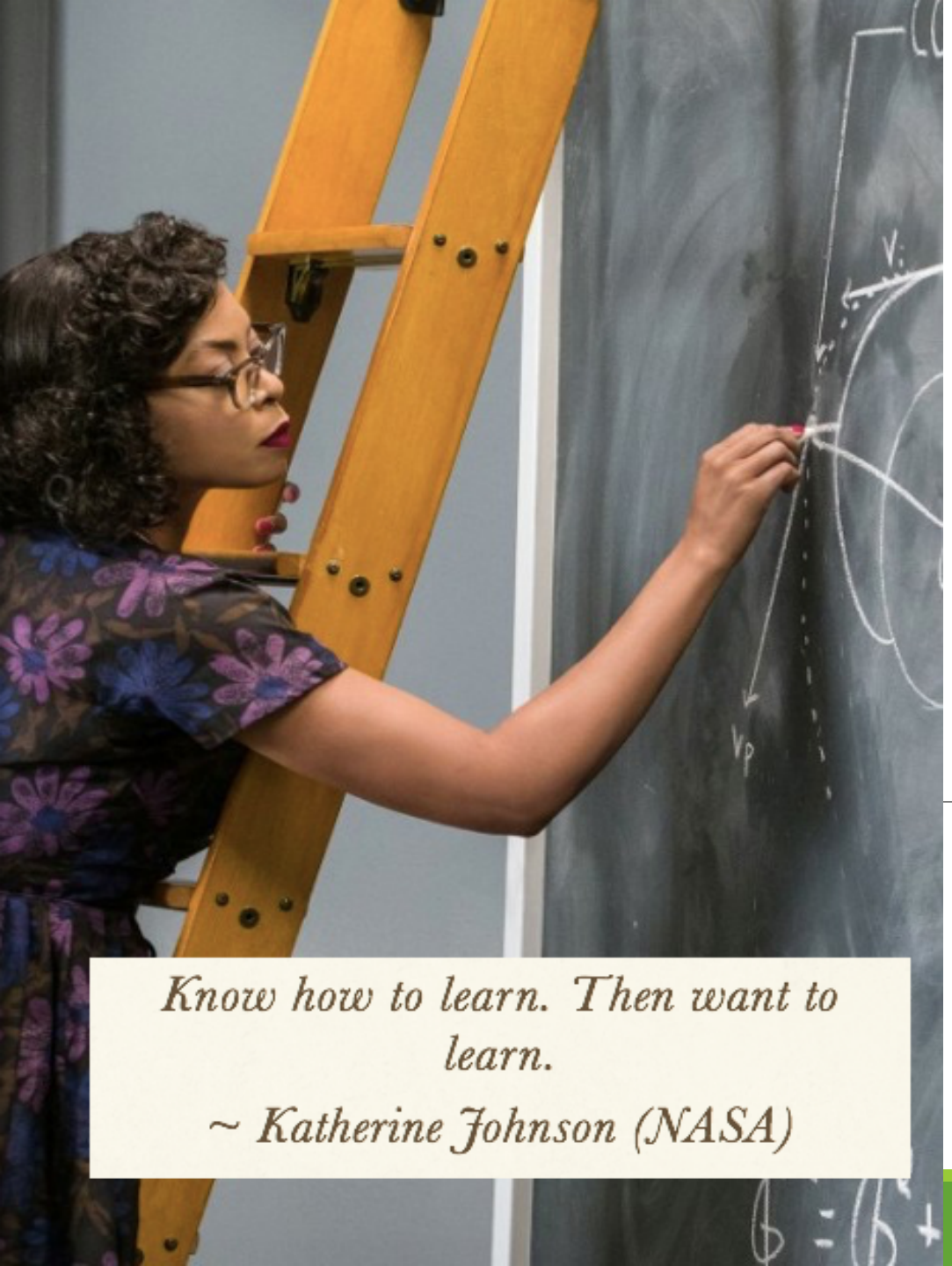
English 4 Dual Enrollment	**12th grade**
Traditional. A Senior English course for college credit. The curriculum is a composition and literary study equivalent to English Composition I on the college level. The course includes analysis of reading materials through formal compositions and tests. Students may receive Senior English credit and 3 hours of college credit. (***Prerequisite: Students must meet entrance requirements of the cooperating institution of higher education***)	

Journalism I	**9 – 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: There are no prerequisites for this course.**)	

Journalism Advanced - Yearbook	**10 – 12th grade**
Traditional. For students interested in print journalism, photography, and graphic design. Students must demonstrate abilities to work collaboratively within schedules and timelines, and may be expected to attend events before and after school. Final project is the successful completion of the school yearbook. (**Prerequisites: Students must complete an application and go through the selection process; students must have a teacher recommendation.** Students must be a sophomore, junior, or senior to apply. It is beneficial for students to take Journalism I before yearbook, but it is not required.) Request: Journalism 2 - Yrbk	

Journalism Advanced - News	**10 – 12th grade**
Traditional. For students interested in broadcast journalism, photography, and graphic design. Must demonstrate abilities to work collaboratively within schedules and timelines, and may be expected to attend events before and after school. Projects will include regular produced school news broadcasts as well as investigative research projects. (**Prerequisites: Students must take Journalism 1 in order to take Advanced Journalism - News.** 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.) Request: Journalism 2	

Genre Literature: Caesar and Vergil	**10 – 12th grade**
Traditional. All texts are read in ***English.*** This course takes a close look at Julius Caesar's *Gallic Wars* and Vergil's *Aeneid*, focusing on their literary and historical significance. Students will examine the social and political landscape in which these works were written and see how one is a direct result of another. This course is designed to be a primer for those wanting to take AP Latin. Recommended for grades 10-12. Will be in the request table as "Ancient Literature".	



Chapter 3

MATH

Integrated Math

The L&N STEM Academy uses the course sequence of Integrated Math 1, Integrated Math 2, and Integrated Math 3 in place of Algebra 1, Geometry, and Algebra 2. The Integrated Math courses cover the same content as the traditional math sequence. The only difference between these sequences is the order that topics are covered. This change specifically fits the culture of the L&N STEM Academy. Math is an overlapping discipline. The disciplines of Algebra 1, Geometry, and Algebra 2 do not exist alone, rather, each discipline overlaps into the others. In the same way math does not exist alone, it overlaps science, technology, and engineering.

Incoming 9th grade students will be scheduled for Integrated Math 1. Students who have completed Algebra 1 in middle school will begin with Integrated Math 2. All students placed in Integrated Math 1 and Integrated Math 2 begin in the College Prep (CP) designation. Each student is challenged to attempt the extra depth of work required for an Honors designated credit. Students who accept the challenge of honors work and demonstrate the quality of work required, will be moved from CP to Honors designation at the end of the first semester.

Integrated Math I College Prep and 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. Topics include linear and exponential functions, triangle congruence, quadrilaterals, and statistics.	

Integrated Math II College Prep and Honors	**9th and 10th 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. Topics include quadratic and radical functions, trigonometry, similarity, and probability. (**Prerequisite: Integrated Math 1 or Algebra 1)**	

Integrated Math III College Prep	**10 – 11th grade**
Traditional. This course is the third 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. Topics include quadratic and radical functions, trigonometry, similarity and probability. (**Prerequisite: Integrated Math 2 or Geometry)**	

Integrated Math III Honors	**10 – 11th grade**
Traditional. **Traditional**. This course is the third 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. Topics include quadratic and radical functions, trigonometry, similarity and probability. The honors class is taught more in depth and at a faster pace than the Integrated III CP course. (**Prerequisite: Honors Integrated Math 2 or Honors Geometry and teacher recommendation)**	

Pre-Calculus College Prep	**11 – 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**)	

Pre-Calculus Honors	**11 – 12th grade**
Traditional. This course includes the topics of Pre-Calculus College Prep but, 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	**11 – 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**)	

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.	
AP Statistics	**11 – 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 2CP or higher, Algebra 2 with "C" or higher recommended, departmental recommendation**).	
AP Computer Principles	**11 – 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: Integrated Math I and II and teacher approval**)	

AP Calculus AB	**11 – 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: CP or Honors Pre- Calculus and Departmental recommendation**)	
AP Calculus BC	**11 – 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 Science	**11 – 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: Integrated Math 1 and II and teacher approval**).	

Chapter 4

SCIENCE

Earth and Space Science

Earth and Space Science is the platform science class for incoming freshmen at the L&N STEM Academy. This change from other schools has shown to be a better alignment with our Science and Math course models, culture, and student needs.

Students enrolled in the Earth and Space Science course will concurrently take Integrated Math 1 or 2 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, start formation, planetary dynamics, remote sensing applications, history of Mars, and current events/applications in planetary science.

Student who have already taken Physical Science AND Algebra I for high school credit in 8th grade and score above the cutoff on the placement assessment will take Chemistry Honors for their freshman year.

Earth and Space Science CP and 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. We refer to this course as AEPS, for Atmospheric, Earth and Planetary Science - more accurately describing the content.

Honors: **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. May also be referred to as AEPS Honors.

Chemistry I College Prep	**10th grade**

Traditional. Chemistry 1 develops an understanding of the relevance of chemistry as it relates to standards of living, career choices, and current issues in science and technology. Course content includes laboratory techniques and safety, properties and structures of matter in its various states, chemical calculations and quantitative relationships, chemical bonding and molecular structure, chemical reactions, solutions, gas laws, and acids and bases. The ability to make mathematical computations using fractions, decimals, ratios and proportions, and exponents is required. (Prerequisite: Algebra 1 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: Integrated Math 1 with eligibility for Integrated Math 2**)

Organic/Biochemistry Honors	**11-12th grade**

Traditional. Organic and Biochemistry Honors will cover the essential 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.**)

Chemistry I Honors	**9 - 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 or Integrated Math 1 with eligibility for Integrated Math 2**)

Microbiology	**11 - 12th grade**

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

Chemistry 2 Honors/AP Chemistry	**11 - 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**)	

Biology I 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 I Honors	**10 - 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	**11 - 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 I, and teacher recommendation**)

Anatomy and Physiology	**11 - 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 Environmental Science	**11 - 12th grade**

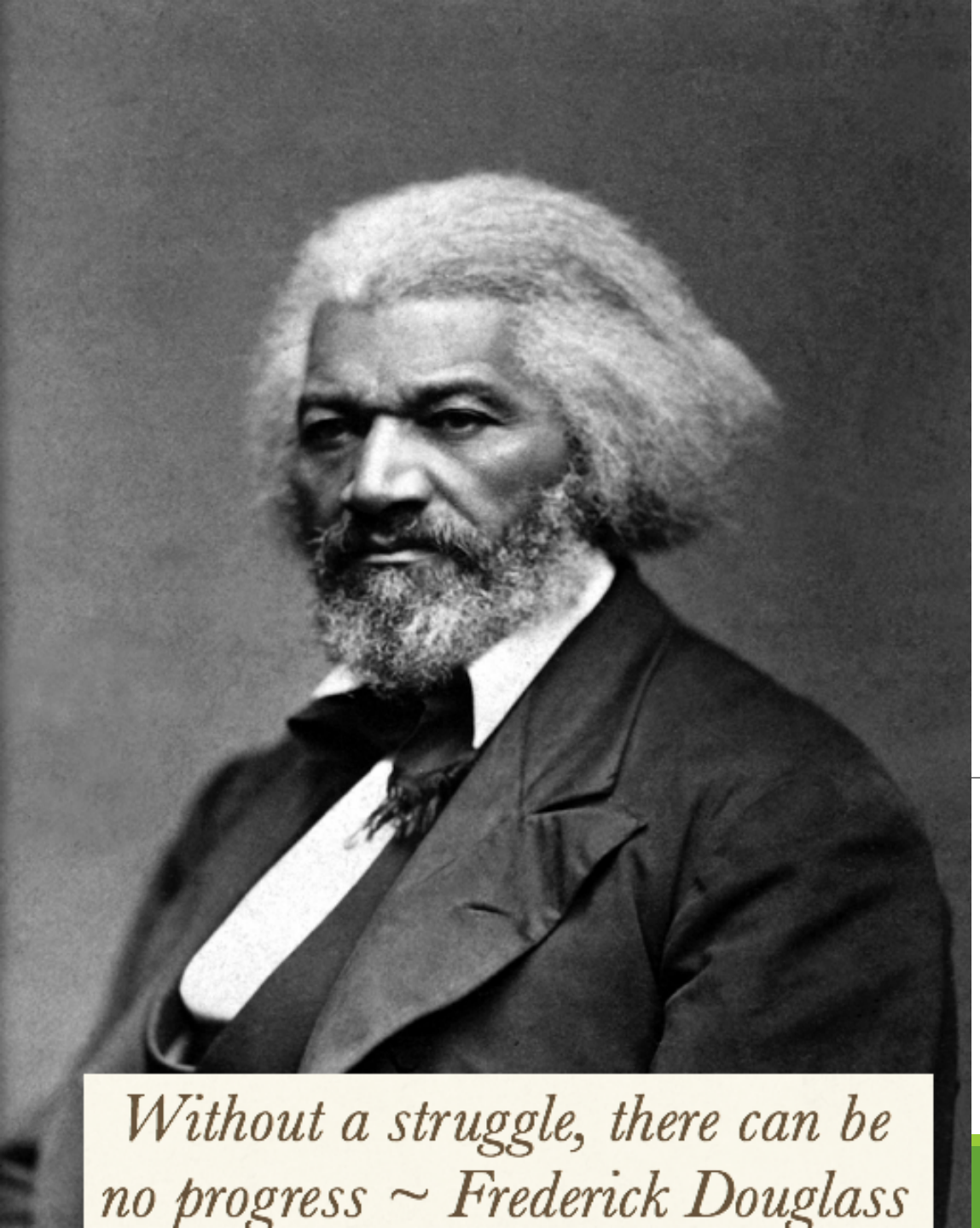
Traditional. A first-year college-level environmental science course, which follows the syllabus of the College Board's Advanced Placement Program. the AP Environmental Science course is designed to prepare students to take the College Board AP Environmental Science exam. The goal of this course is to 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 I, Chemistry I, and teacher recommendation**)

Astronomy	11 - 12th grade
Traditional. 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: Integrated Math 1 & 2, Integrated Math 3/AlgII recommended)**	

Geology	11 - 12th grade
Traditional. This course explores the origins and the connections between the physical, chemical, and biological processes of the earth system. The student will investigate maps, matter and minerals, the rock cycle, geologic history, oceanography, hydrologic cycle, geologic hazards, and plate tectonics. Geology focuses on the physical aspects of the earth processes and cycles. Tennessee geologic features will also be a part of this study. **(Prerequisites: Biology 1 and Chemistry 1)**	

Physics Honors	10 - 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. Concurrent placement in Advanced Math or Calculus is recommended. (**Prerequisite: Integrated Math 1 & 2, Co-req Int Math 3 or higher. Chemistry and Biology recommended**).	

AP Physics 1	11-12th grade
Traditional. This is equivalent to a first semester in college in algebra-based physics. This course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy and power; and mechanical waves and sound. It also introduces electric circuits. **Prerequisites: Geometry and currently taking Algebra 2 or equivalent course.**	



Chapter 5

SOCIAL STUDIES

AP Comparative Government and Politics	11 - 12th grade
NEW. **Traditional.** This course introduces students to the rich diversity of political life outside of the United States. The course uses a comparative approach to examine the political structures, policies, politics, economic, and social challenges among six selected countries: Great Britian, Mexico, Russia, Iran, China, and Nigeria. Additionally, students examine how different governments solve similar problems by comparing the effectiveness of approaches to many global issues. (**Prerequisite: Teacher recommendation**)	

AP European History	10- 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 principal 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. *Summer assignment required.* **(Prerequisite: Teacher recommendation)**	

AP Human Geography	9th grade only
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). (**Prerequisite: Teacher recommendation**)	

AP Human Geography	10 - 12th grade only
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	11 - 12th grade

Blended and 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**)

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. ***Taken with US Government and Civics***

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**) **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, 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**)	

Film Studies	10 - 12th grade
Traditional. This elective course serves as an introduction to critical film viewing. Students will focus on both elements of film (setting, camera, editing, lighting, sound, acting, casting, dialogue, character development, character relations, story development, pace) and on historical importance of the films (context, events, individuals, cultural perspective, target audience, stereotypes, gender roles and relations, intended and unintended messages, film's influence on society, and society's influence on film). Emphasis is placed on developing active and mature film viewing practices. Students will be expected to complete research and writing assessments.	

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**)..	

US Government and Civics	10th grade
(1/2 credit) 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.*	

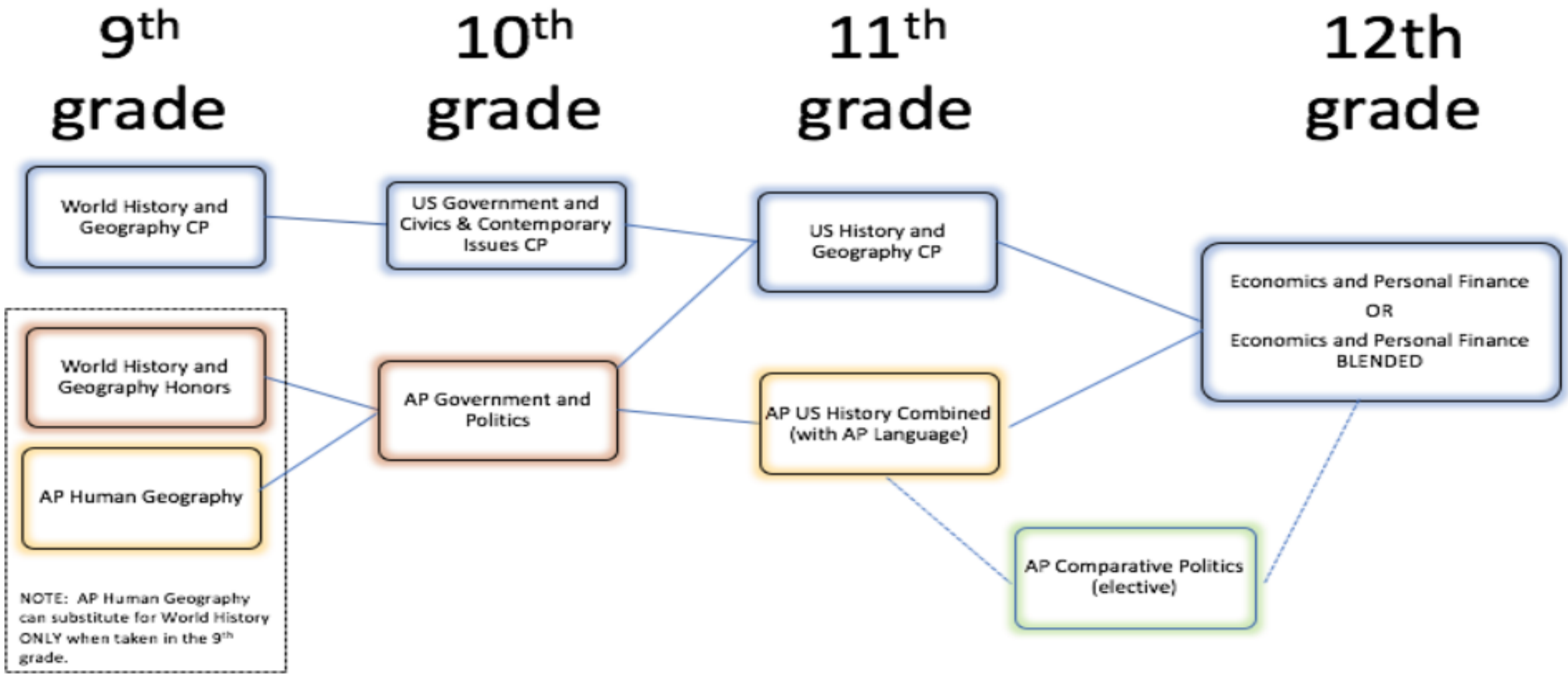
African American History	11 - 12th grade
Traditional. Students will examine the life and contributions of African Americans from the early 1600's through modern America. Students will explore the influence of geography on slavery and the growth of slavery on the American continent. Students will consider 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.	

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.	

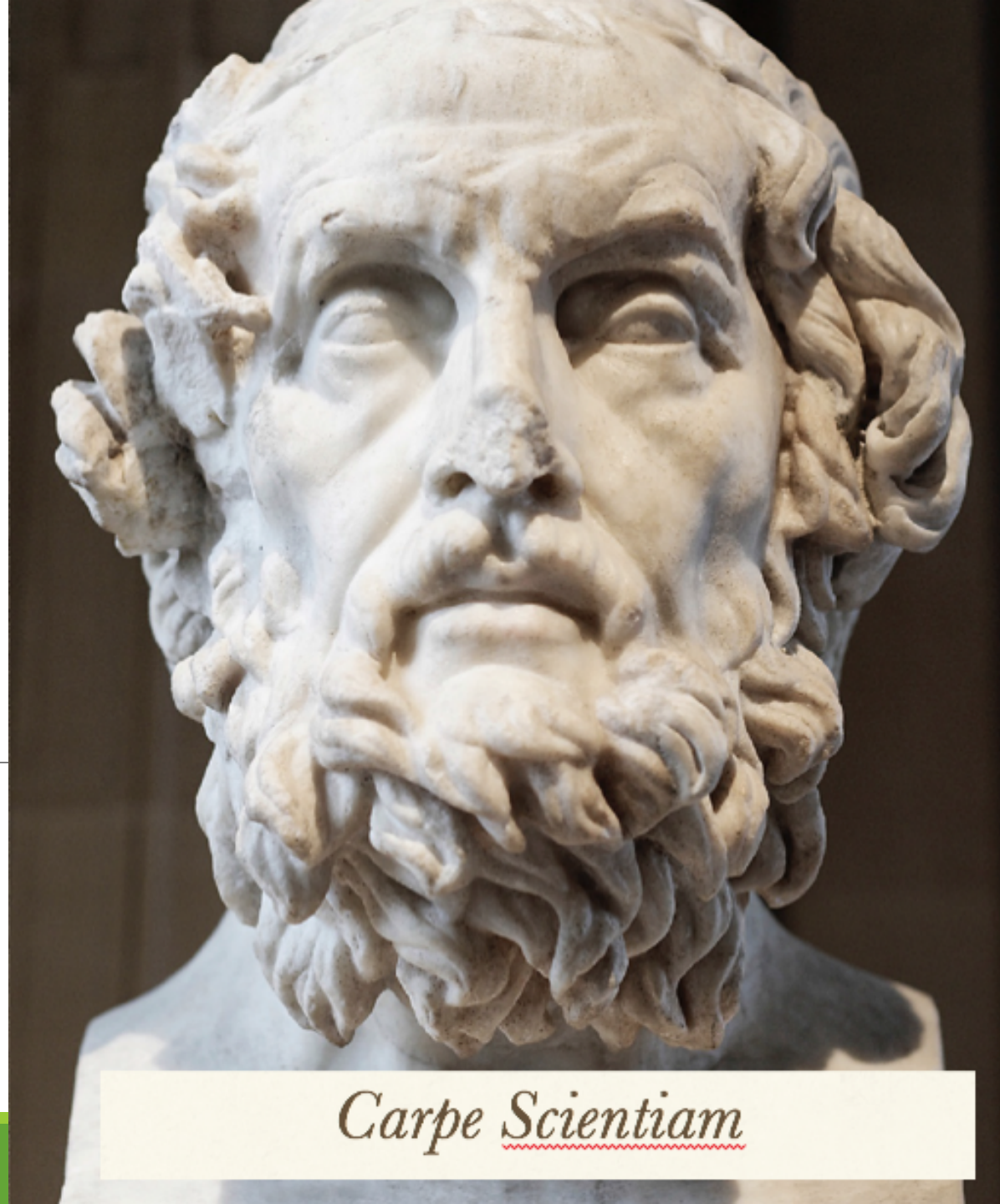
World History and Geography Honors	9th grade
Traditional. Students will study the rise of the nation state in Europe, the French Revolution, and the economic and political roots of the modern world. They will examine the origins and consequences of the Industrial Revolution, 19th Century political reform 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 workload well beyond that of World History College Prep.*	

L&N STEM ACADEMY SOCIAL STUDIES PROGRESSION



Chapter 6

WORLD LANGUAGES



Latin I College Prep	9 - 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	10 - 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	10 - 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	11 - 12th grade
Facilitated Virtual. For students who are interested in further addition to the emphasis on the areas of speaking and listening in the first 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**)	

AP Latin Vergil and Caesar	**11-12th grade**

Traditional. 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 test out of the foreign language requirement. (**Prerequisite: Teacher recommendation,** ***Recommended pre-req or co-req, Genre Literature: Caesar and Vergil***)

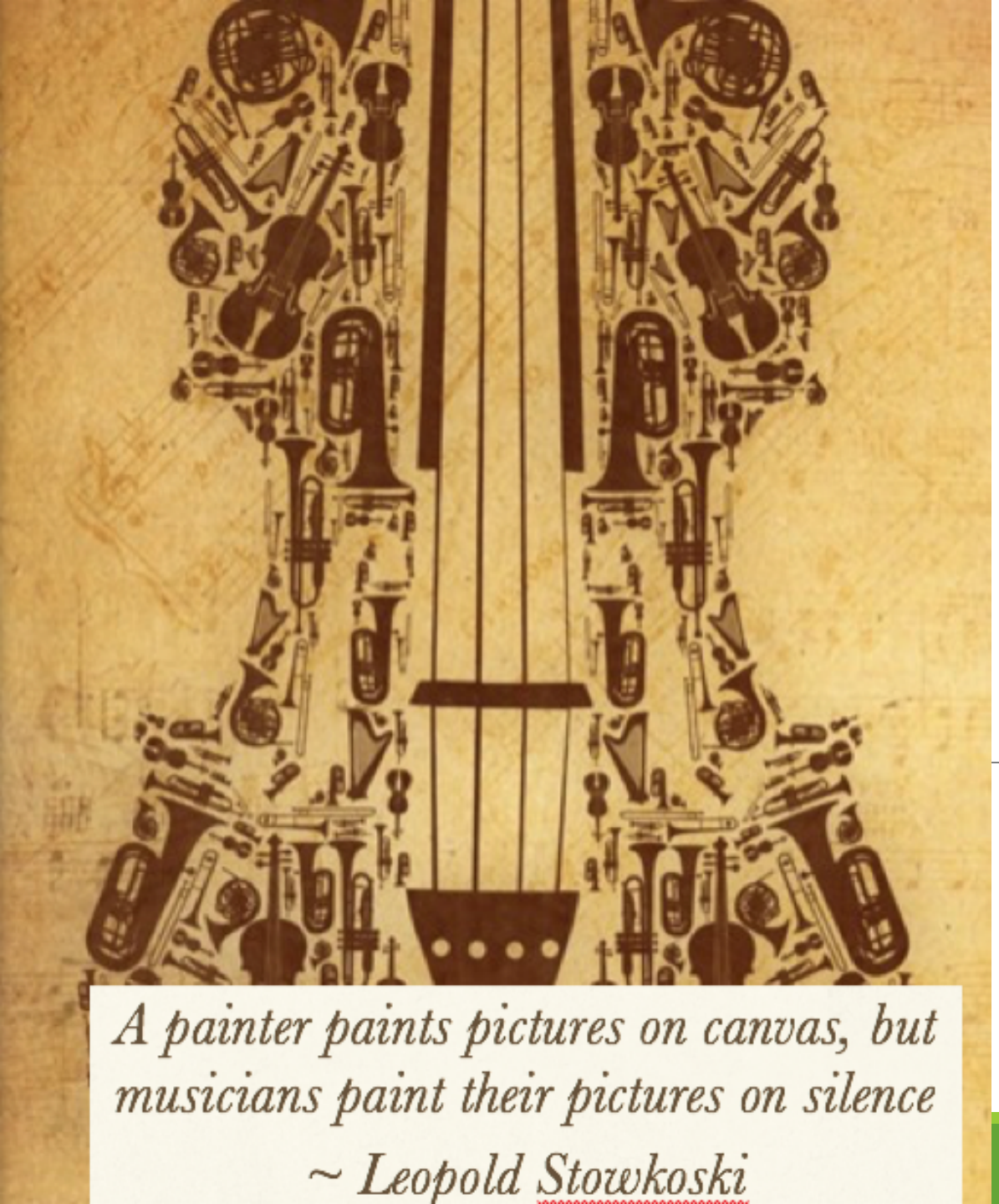
Special note: For students who come to L&N with a year already completed in another language; we will attempt to find placement in a Distance Learning (QuEST) or online section if possible. We cannot guarantee this is available for every language offered at other schools. Students must consult a counselor if they have questions about meeting the foreign language requirement in languages other than those we offer.

Mandarin Chinese I	**9 - 12th grade**

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	**10 - 12th grade**

Traditional. This course is designed for those who have finished Chinese I 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 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 I and teacher recommendation**).



Chapter 7

FINE ARTS

Fine Arts - Visual Art

Visual Art I	**9 - 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. **NOTE:** ***Digital Art & Design I may also be used as a Fine Art Credit.***	

Honors Art Blended	**11 - 12th grade**
Blended. Honors Art is for students who are 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) or for students who are completing their AP portfolio. *May be taken concurrently with an Advanced Art class, but may not be repeated.* ***(Prerequisite: A/B in Advanced Art and/or teacher recommendation)***	

Advanced Art General	**10 - 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	**10 - 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 - Visual Art

AP Studio Art	11 - 12th grade
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 Advanced Art and teacher recommendation)***	

AP Studio Art: Drawing	11 - 12th grade
Traditional/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. *A summer assignment is required.* ***(Prerequisites: A/B in Advanced Art Drawing and teacher recommendation)***	

AP Studio Art: 2D Design	11 - 12th grade
Traditional/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. *A summer assignment is required.* ***(Prerequisites: A/B in Advanced Art General and teacher recommendation)***	

AP Studio Art: 3D Design	11 - 12th grade
Traditional/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. *A summer assignment is required.* ***(Prerequisite: A/B in Advanced Art General and teacher recommendation)***	

Fine Arts - Vocal Music

Vocal Music	9 - 12th grade
Traditional. Vocal Music is for beginning choral students who seek to perform a wide variety of sacred and secular choral literature of easy to medium difficulty in a variety of styles. Emphasis is placed on vocal production and basic choral techniques, intonation, phrasing, sight reading, general musicianship skills, and understanding and attitudes of individuals to the group. There are no prerequisites for this course. Performances for the school and the community are required. Can be taken for multiple credits. **(No prerequisites)**	

Choral Ensemble	10 - 12th grade
Traditional. L&N Ensemble consists of students with previous choral experience or selected by audition. Emphasis is placed on an advanced degree of musicianship, increased harmonic and rhythmic reading skills, and increased performance skills. Performances for the school, community and festival are required. Students are required to purchase wear a specific outfit determined by the director. Can be taken for multiple credits. (**Prerequisites: Vocal Music, Audition, or Teacher recommendation**)	

Honors Choral Ensemble/Vocal Music	10 - 12th grade
Traditional. Honors is offered to students who have already taken at least one full year of chorus at the L&N STEM Academy. 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 purchase and wear a specific outfit determined by the director. Can be taken for multiple credits. (**Prerequisites: Vocal Music, Audition, or Teacher recommendation**)	

Musical Theatre	10 - 12th grade
Traditional. This course offers students the opportunity to study and perform in this genre. This is a production- based course designed to provide students with opportunities to participate in the varied aspects of a musical theatre production. The course combines practical vocal training including diction and tone quality as well as the development of students as actors by instilling work ethic, time management and the importance of teamwork. Students will study the evolution of musical theatre and develop an appreciation for this uniquely American art form. (**Prerequisites: Vocal Music, Ensemble, Theatre Arts, Audition, or Teacher recommendation**)	

Fine Arts - Instrumental Music

String Orchestra	9 - 12th grade
Traditional. String Orchestra is for students who study violin, viola, cello, or double bass. Prior experience with one or more of these instruments is required. The ability to read music notation is also required. Enrolled students will study and perform orchestral literature from a variety of periods, including Baroque, Classical, Romantic, and Contemporary. The school provides cellos and double basses to students of these instruments. Students will be expected to maintain a regular practice schedule, and adhere to all musical expectations of the director. Multiple concert performances are required. Additional performance opportunities include invitational and audition clinics, festivals, and contests. **(No prerequisites)**	

Honors String Orchestra	9 - 12th grade
Traditional. Students enrolled in Honors Orchestra will be required to audition and perform in multiple musical areas. Requirements for the successful completion of the honors component will include playing all 12 major scales in a 3 octave range, playing selected melodic minor scales in a 3 octave range, participation in KCS Orchestra Showcase, auditioning and participating in All-East/All-State Orchestra (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 should be musically prepared to lead by example in each rehearsal. (**No prerequisites**)	

Fine Arts - Instrumental Music

Concert Band: Woodwinds & Brass	9 - 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 auxiliar needs for their specific instrument (reeds, cloths, valve oil, etc.). Students will study a variety of literature, including marches, waltez, orchestral transcriptions, world music, folk, and traditional band literature from 20th and 21st centuries. Students are expected to be able to read music notation. Multiple concert performances will be required. Additional performance opportunities include invitational and audition clinics, festivals, and contests. **(No prerequisites)**	

Honors Concert Band: Woodwinds & Brass	9 - 12th grade
Traditional. Students who are enrolled in Honors Concert Band will be required to perform and audition in multiple 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-East/All-State (if selected), and additional performance/tests as given by the director. Enrolled students should expect to be utilized as leaders for their respective sections, and must be musically prepared to lead by example in each rehearsal. (**No prerequisites**)	

Fine Arts - Instrumental Music

Percussion Ensemble	9 - 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 must be able to read music notation, and should 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 the 20th and 21st centuries. Multiple concert performances will be required. Additional performance opportunities include invitational and audition clinics, festivals, and contests. **(No prerequisites)**	

Honors Percussion Ensemble	9 - 12th grade
Traditional. Students who are enrolled in Honors Percussion Ensemble will be required to perform and audition in multiple 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-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 the Percussion Ensemble, and should be musically prepared to lead by example in each rehearsal. (**No prerequisites**)	

Fine Arts - General Music

AP Music Theory	9 - 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**)	

Digital Music Production	9 - 12th grade
Traditional. Digital Music Production offers a practical, fully multimedia-based curriculum designed to teach basic musical concepts through the creative process of composition, recording, and editing. Students will have hands-on experience with digital audio workstation software, and learn how to create, edit, save, and produce digital music. This course is designed to create an in-depth general music experience without having to know traditional music theory. Students will have a meaningful hands-on applied learning experience that impacts not only their musical knowledge, but also their understanding of modern digital audio technology. *This is a lab-based course, and students will be expected to complete their coursework during class*.	

Development of Rock	10 - 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, cultural and technological 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.*	

Fine Arts - Theatre

In previous years, Theatre 1 and 2 have been offered separately as two distinct classes. This year, the Theatre Arts program will offer two combined classes with Theatre 2 students acting as mentors for Theatre 1 students. In years past, Theatre 1 instruction has operated under the assumption that all Theatre 1 students enter the program with no prior knowledge of acting or filmmaking and intend to automatically advance to Theatre 2 the following year. In reality, students of all levels of previous knowledge sign up for our Theatre 1 classes and may not intend to complete Theatre 2 during their time at the L&N STEM Academy. By combining the Theatre 1 and 2 courses, students who choose to take Theatre 2 multiple years during their high school career will have more opportunities to share the skills they have a acquired with their classmates. Thanks to this added level of peer mentorship and collaboration, more students will be able to speak to our school's culture of students owning their own learning, making themselves more competitive while vying for jobs in TV and film.

Theatre Arts 1 for Film and TV	**9 - 12th grade**
Traditional. This fine-arts elective is designed for students who have an interest in acting in front of the camera. The curriculum includes acting technique, screenplay writing, text analysis, filming and editing, and submission to film competitions. Students are expected to be outgoing and highly motivated. *Listed as "Theatre Arts I".*	

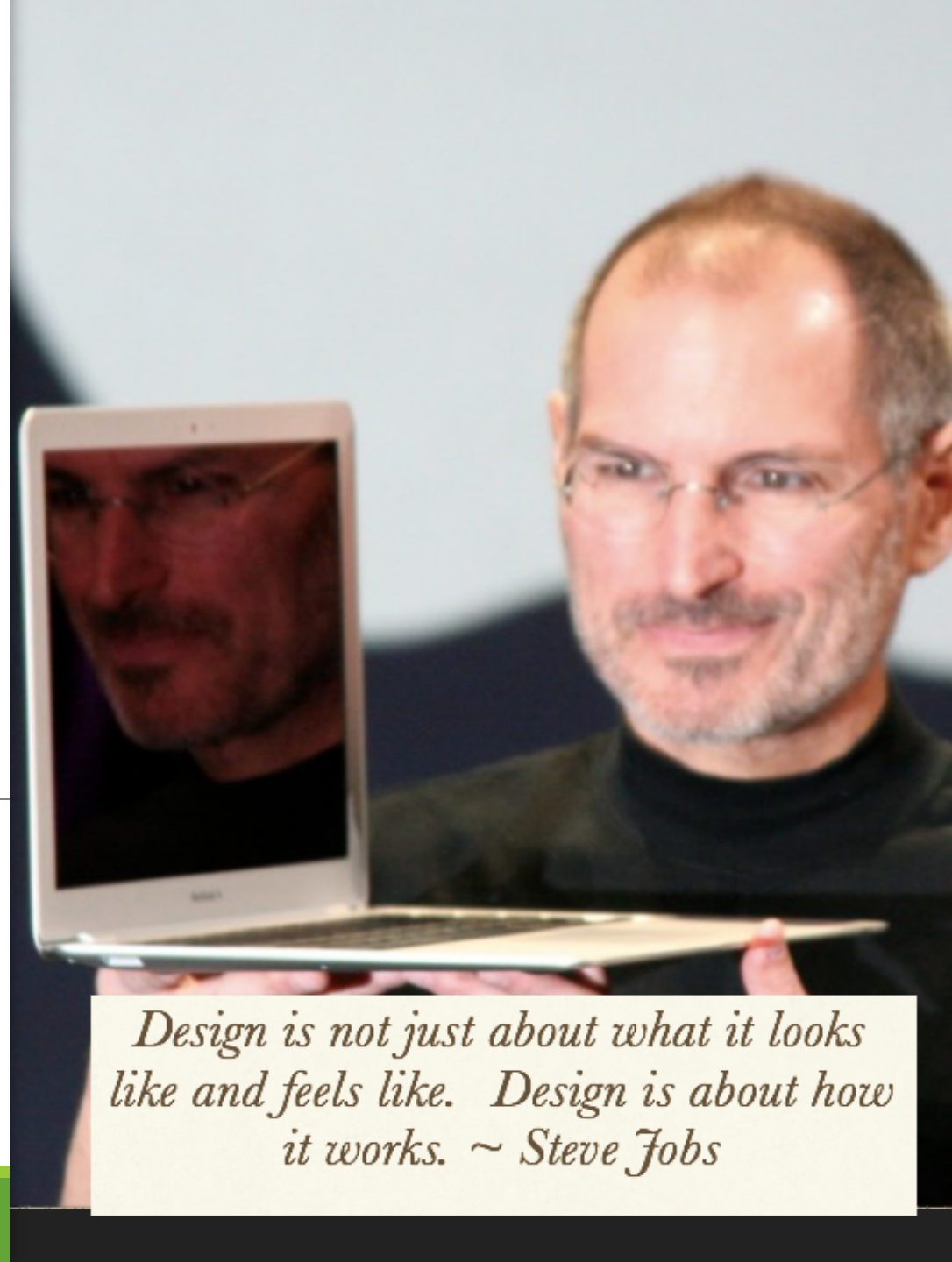
Theater Arts 2 for Film and TV	**10 - 12th grade**
Traditional. This fine-arts elective is designed for students who have successfully completed Theater Arts 1, have earned teacher recommendation, and wish to expand their acting technique as applied to TV and film. The curriculum includes further study in acting technique, filming, editing, and focuses heavily on project- based learning (filmmaking). Students in grades 10 to 12 may repeat this class for multiple credits with teacher permission. (**Prerequisite: Theater Arts 1 for Film and TV and teacher recommendation**) Listed in requests as "Advanced Theater Arts"	

Musical Theatre	**10 - 12th grade**
Traditional. This course offers students the opportunity to study and perform in this genre. This is a production- based course designed to provide students with opportunities to participate in the varied aspects of a musical theatre production. The course combines practical vocal training including diction and tone quality as well as the development of students as actors by instilling work ethic, time management and the importance of teamwork. Students will study the evolution of musical theatre and develop an appreciation for this uniquely American art form. (**Prerequisites: Vocal Music, Ensemble, Theatre Arts, Audition, or Teacher recommendation**)	

VISION: With the confluence of technologies, visual arts and creative practices have changed dramatically over the past several years. Increasingly the design studio functions as a dynamic and vital space for exploration and innovation. Designers are now leveraging *"Cross-Disciplinary Design"* and critical thinking to develop strategies that address a range of challenges and create solutions. Designers solve complex problems within the constraints of time, space, budget, and technology. Areas of focus include, corporate identity, environmental way-finding, motion graphics communications, publication design, interactive media, web and game interface design, packaging, information design, animation/simulation and VR. The future will be very different from today and design leads the way. Our goal is to offer fresh perspectives to such a degree that students developed a whole new set of strategies devoted to achieving Multi-Dimensional Thinking.

Chapter 8

CAREER TECHNICAL



Digital Arts and Design Program of Study

Digital Arts and Design I	**9 - 12th grade**

Traditional — This course will serve as a foundation course to introduce fundamental cross-disciplinary design concepts, along with processes and vocabulary that are used within digital arts and design. Assignments, lectures, demonstrations, and critiques will expose students to topics of design theory such as composition, figure and ground, color, scale, contrast, form and function, progression, and transformation.

The objective is to create portfolio quality DESIGN, with a focus on developing the necessary skills of the professional studio. The course will focus on creative design solutions for a wide range of visual problems. A KEY objective is to expand our understanding of design philosophy and create aesthetically and skillfully designed projects. *The level of effort required for successful completion of this course is HIGH.*

Students will work with a variety of software to create professional quality projects. This course is not geared towards a "particular software", the concentration within one software would undermine the intent of cross-disciplinary design, which is at the core this course. We investigate the formal and communicative aspects of two-dimensional form and develop visual language skills necessary for success in any creative digital project no matter the complexity.

This course may also count as a Fine Arts credit towards graduation requirements.

Digital Arts and Design 2	**10 - 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	**11 - 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 a digital world leverage technologies and software applications ***(Prerequisites: Digital Arts and Design 2 and teacher recommendation)***

Digital Arts and Design Program of Study - Animation and Simulation Concentration

SPECIAL PROGRAM NOTE: Students within the Digital Arts & Design Program will have the opportunity to apply for our ORNL Summer Internship. The Internship is a paid full time program where you will experience working within a professional environment within the National Center for Computational Sciences Oak Ridge National Laboratory. *Students must apply and develop a CV in addition portfolio of work with instructor signature*

Introduction to Animation and Simulation	**10 - 11th grade**
Traditional — The class curriculum allows students to explore the scientific, industry and entertainment landscape of animation and simulation while still pursuing a broad-based design education. With an emphasis on 3D Animation and Simulation with 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)***.	

Advanced Animation and Simulation	**10 - 12th grade**
Traditional — 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)***.	

Networking Systems Program of Study

Computer Science Foundations	**9 - 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.)*** *Eligible for ComptTIA's initial certification.*	

Computer Systems	**9 - 11th 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**)*	

Web Design Program of Study

Web Design Foundations	**9 - 11th 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 HTML5 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 track.	

Website Development	**10 - 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 HTML5, 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. *Eligible for CIW Website Design Specialist industry certification.*	

Website Design Practicum	**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)	

New Program of Study - Aviation Flight

Special Note: This is the first class taught in a new pathway that will add each year to complete the requirements to take the Ground School test for small plane pilot's license. Next course is Principles of Flight: Aviation I, which will be added school year 2020-21 if this program finds enough interest.

In the course request table a student would register for "ADM9221 - Principles of Flight"

Introduction to Aerospace	**9 - 11th grade**
Traditional. Introduction to Aerospace is a comprehensive foundational course for students interested in pursuing careers in aviation. This course covers the basic principles governing flight and the regulation of flight that every aviation professional must know regardless of his or her occupation—as a pilot or an engineer, a salesperson or a specialist, a mechanic or a statistician. In addition to acquiring foundational knowledge of safety procedures and industry regulations, students will also gain essential understanding of aircraft structures, the flight environment, basic procedures, and navigation. Upon completion of this course, proficient students will be prepared for further study in advanced Aviation Flight and/or Aviation Maintenance courses.	

Don’t let what you can’t do stop you from doing what you can - Coach John Wooden

Chapter 9

PHYSICAL EDUCATION

Lifetime Wellness	9 - 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	9 - 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	9 - 12th grade

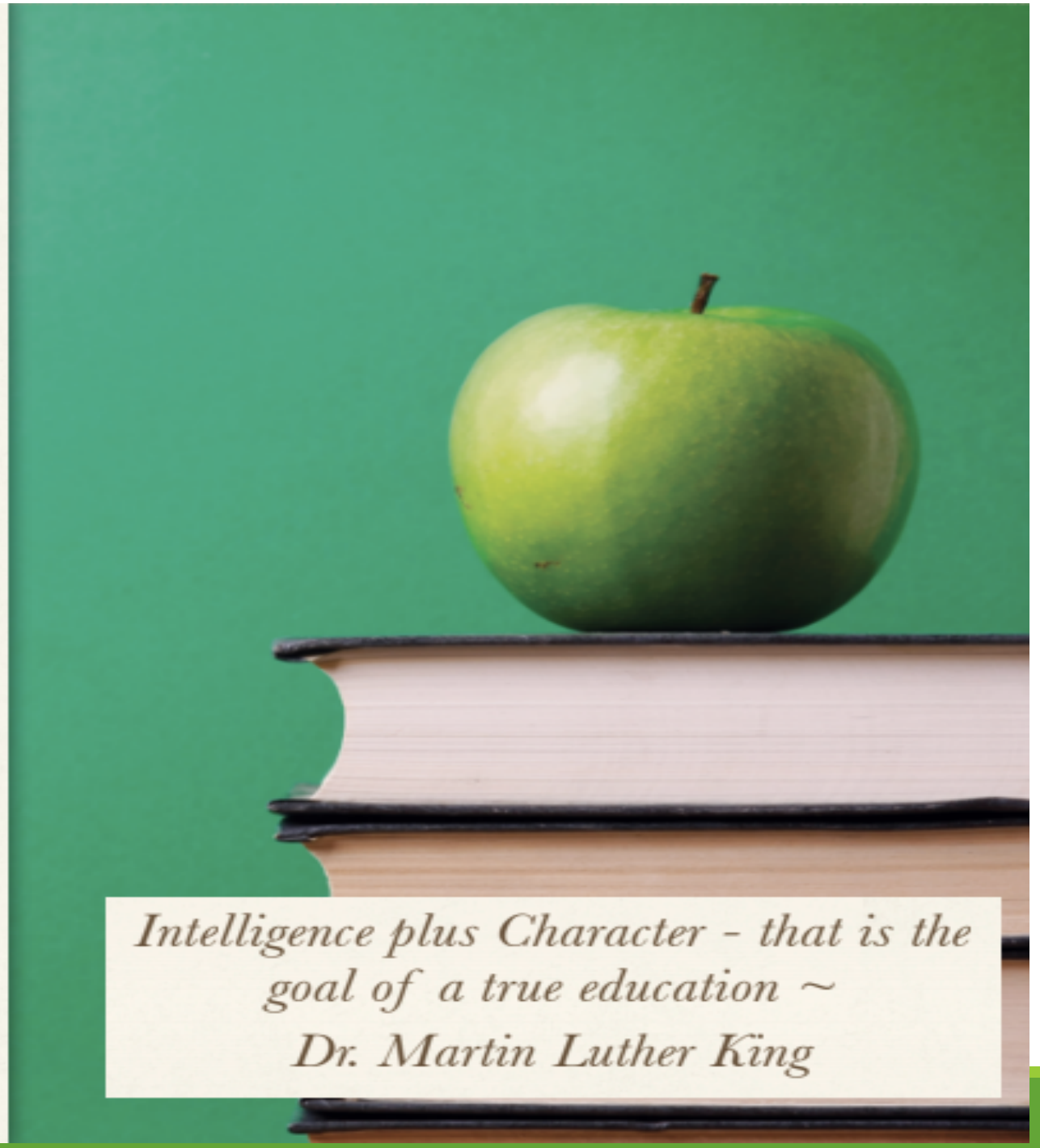
Blended. Student must have motivation and desire to participate in this class. The focus of this class is on individualized fitness. Students will be responsible for designing, implementing, and recording their individual fitness program and progress throughout the year. Weekly logs and plans are required 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. Most work will be done outside of class, but some instructional time with teacher will be required. (**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	Ultimate Frisbee

Chapter 10

GENERAL ELECTIVES



Dual Enrollment	**11 - 12th grade**
Traditional. Dual enrollment courses allow juniors and seniors to obtain both high school and college credit. These courses are offered through higher education institutions and are available in various locations across Knox County. There may be a cost associated with these classes. Students are responsible for their own transportation if taking a dual enrollment course. Because the L&N STEM Academy operates on an alternating block schedule of L & N days, it is difficult to schedule dual enrollment classes during the school day and will only be approved for first or fourth block time frames. All dual enrollment classes must be approved by the School Counselor. The high school schedule of courses at the L&N STEM Academy always takes first priority over dual enrollment courses. A dual enrollment application will be available through the school website and is required for enrollment in a course. *Students must email a copy of their registration to their counselor before their schedule will be finalized.* Please visit the School Counseling page of the L&N STEM Academy's website for links to more information about eligibility and steps for enrollment. Students must meet the minimum GPA and ACT scores for the classes in which they wish to enroll. There may be fees associated with this process.	

DUAL ENROLLMENT OPTIONS*	
Partial List of General Education Courses	
English 1010 (Seniors Only)	College Algebra
Intro to Sociology	General Psychology
Macroeconomics	Probability and Statistics
Partial List of Non-General Education Courses	
Lifetime Fitness	Keyboarding and Computer Skills
Painting	Sculpture
Bluegrass Ensemble	Beginning Bowling
Elementary Modern Dance	Exercise to Music
Beginning Racquetball	Critical Thinking
Intro to Photography	Adobe After Effects
Introduction to Desktop Video/ Audio	Campus Broadcast 1: Studio Operations
These are only partial lists of the courses available for both General Education and Non-General Education classes. Requirements are different for these two groups. Be sure to check the Pellissippi Community College website and talk to your school counselor.	

Humanities	10 - 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 the study of Humanities. 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.

Peer Tutoring	10 - 12th grade

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

African American History	11 - 12th grade

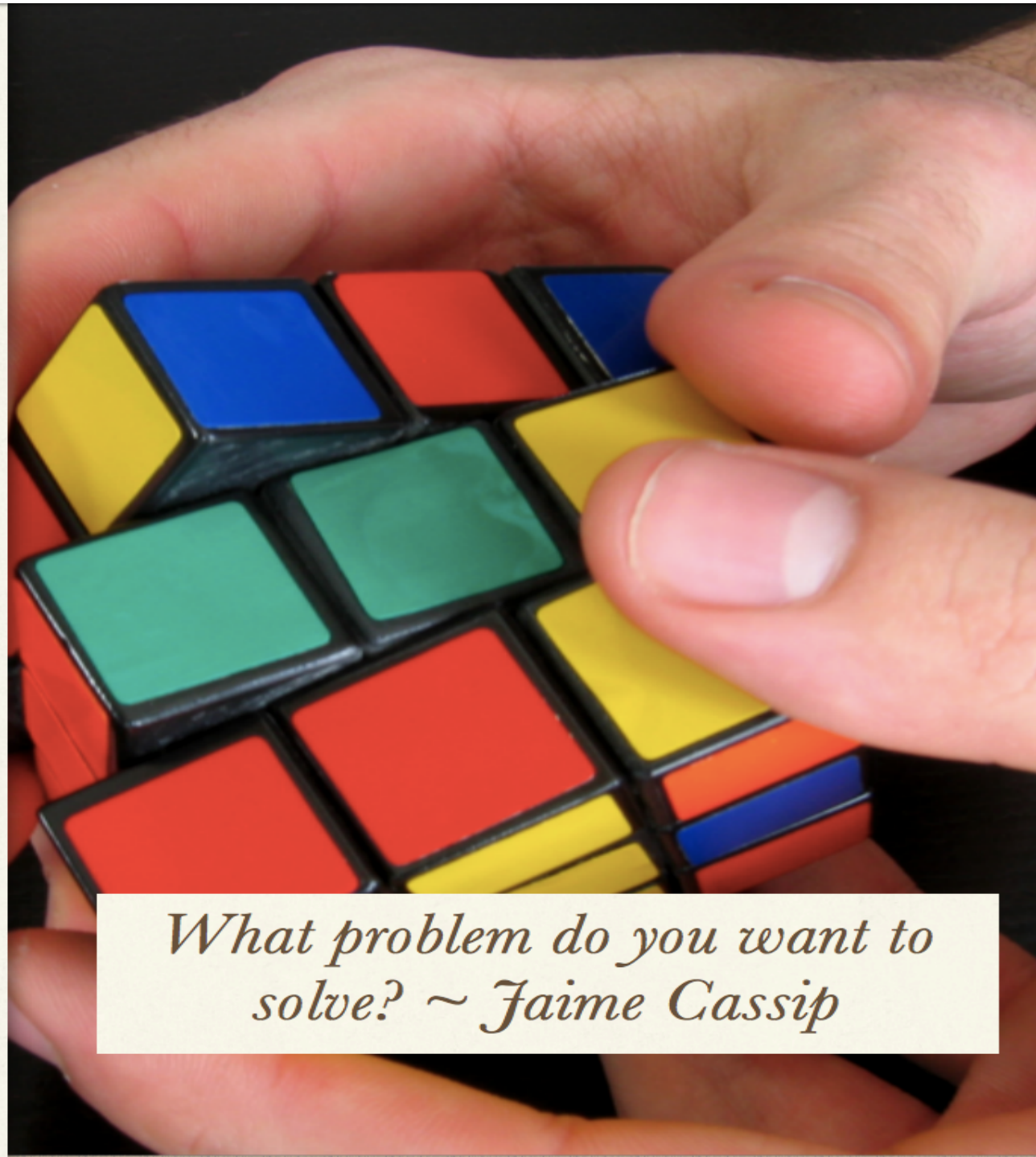
Blended. Students will examine the life and contributions of African Americans from the early 1600's through modern America. Students will explore the influence of geography on slavery and the growth of slavery on the American continent. Students will consider urban and rural African American communities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

Driver's Education	10 - 12th grade

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

Chapter 11

SCIENTIFIC RESEARCH & AP CAPSTONE



The arc of Scientific Research, Problem Solving and Modeling (or Seminar and Research) form the cornerstone of the L&N experience. Students leave having experienced design thinking broadly across multiple problems and deeply as they investigated something in their own original research. The skills learned in these classes apply across all content areas and will serve students no matter what they do following graduation. These are the building blocks that will make them lifelong designers of the world and solutions around them!

Scientific Research	**9 - 10th grade**

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

Scientific Problem Solving	**10 - 11th grade**

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

Scientific Modeling	11 - 12th grade
Facilitated Virtual. A continuation of Scientific Problem Solving, this is a course in which students, working in small group cohorts, conduct an in-depth research project and presents their findings through the Internet Science and Technology Fair (ISTF). Two major components of the course are: (1) a technical report including sections for literature search, design, procedures, analysis of data, experimental results, conclusions, and future directions; and (2) an audio-visual presentation that is appropriate to the nature of the research and the type of audience. Students will choose from a list of critical technologies for their study. Critical technologies include Materials, Manufacturing, Information and Communication, Transportation, Living Systems, Energy, and Environmental Quality. Students work in an online environment with minimal teacher interaction. Students work closely with a STEM professional assigned to the project. The final project of the course will be a website created to display the project research and findings in accordance with the ISTF guidelines and a prototype of the solution offered. Information on ISTF can be found here: http://istf.ucf.edu/. Students must have motivation and desire to participate in this program. Students and parents must attend a blended orientation to participate. (Prerequisite: Successful completion of Scientific Problem Solving with a B or higher and Scientific Problem Solving teacher recommendation)	

AP Seminar	10 - 12th grade
Blended and 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. AP Seminar is the first of two courses in the AP Capstone™ program. AP Seminar is a prerequisite for AP Research. Students must have the motivation and desire to learn in a blended style that requires high-level, self-paced participation both online and in- person. *Summer assignments are required*. **(Prerequisite: Teacher recommendation)**	

AP Research	11 - 12th grade
Blended and Traditional. The second course in the AP Capstone experience, AP Research allows students to deeply explore an academic topic, problem, issue, or idea of individual interest. Students design, plan, and implement a yearlong investigation to address a research question. Through this inquiry, they further the skills they acquired in the AP Seminar course by learning research methodology, employing ethical research practices, and accessing, analyzing, and synthesizing information. Students reflect on their skill development, document their processes, and curate the artifacts of their scholarly work through a process and reflection portfolio. The course culminates in an academic paper of (accompanied by a performance, exhibit, or product where applicable) and a presentation with an oral defense. Students must have the motivation and desire to learn in a blended style that requires high-level, self-paced participation both online and in- person. *Summer assignments are required*. Counts as English IV credit; students taking this course do not need to enroll in English IV. (**Prerequisite: AP Seminar and teacher recommendation**).	

A student completing both these AP courses plus an additional minimum number of other AP courses will be considered a “capstone graduate” and be recognized as such at graduation. Students who complete these two classes alone will receive recognition on their diploma.