

*"A mind that is stretched by a new experience
can never go back to its old dimensions."*



Quince Orchard High School
ADVANCED STUDIES
in Arts and Academics
SIGNATURE PROGRAM

For the 2025 - 2026 School Year

The Quince Orchard High School

Advanced Studies in Arts and Academics Signature Program

*is designed to provide all students an opportunity
to maximize their multiple intelligences and creativity
and to value their uniqueness
by allowing them to participate in a wide variety
of Honors, advanced level and Advanced Placement courses.*

Program Goals:

- Increase the number of students who become involved in the Advanced Studies program, which includes honors, advanced level and Advanced Placement courses.
- Increase the number, range, and scope of honors and Advanced Placement course offerings.
- Heighten the academic rigor of the educational program of all students.
- Sustain and increase minority student representation in honors classes, beginning in the ninth grade.
- Increase the number of minority students who eventually will become involved in Advanced Placement courses.
- Raise the number of students submitting art portfolios for Advanced Placement consideration in the visual arts.
- Provide in-school and after-school support programs for students taking advanced courses.
- Provide teachers with professional development opportunities designed to enhance students' skills in critical and analytical thinking, math, and writing.
- Expose middle school students to the benefits of taking advanced courses in preparation for college.

Signature Program Coordinator

Ms. Colleen Adams

Principal

Dr. Irina LaGrange

Rise to the Challenge!

“Take advantage of the link between participation in advanced courses and higher performance in all classes. By taking an honors level class, you surround yourself with students who are as serious as you are about their studies.”

Choose an area of interest, and register for courses that will lead you to an advanced level or AP course. Research shows that students who are involved in advanced programs at school are more focused, achieve at higher rates, and graduate with more skills. Notice documented prerequisites in the course bulletin and fit those into your schedule early, so that you can enjoy advanced levels during your junior and senior years. At Q.O., we offer the following most advanced coursework:

- **Art**

Advanced and AP Studio Art, Advanced Photography, Advanced Ceramics, Advanced Digital Art, AP Art History

- **Child Development Associate Preschools Program (CDA)**

Teaching Internship

- **Computer Science**

AP Computer Science Principles, AP Computer Programming, Computer Networking*

- **English**

AP Language, AP Literature, AP Seminar, Advanced Journalism

- **Math**

AP Calculus, AP Precalculus, AP Statistics

- **Media & Communications**

Advanced Game Development, Advanced Video Production

- **Music/Performance Arts**

Symphonic Band, Wind Ensemble, Jazz Ensemble, Symphonic Orchestra, Acapella, Show Choir, Advanced Guitar, Advanced Piano, AP Music Theory, Advanced Acting

- **Project Lead the Way - Engineering**

Introduction to Engineering Design, Principles of Engineering, Digital Electronics, Aerospace Engineering*, Environmental Sustainability, Engineering Design & Development

- **Science**

AP Biology, AP Chemistry, AP Physics, AP Environmental Science

- **Social Studies**

AP African American Studies, AP US History, AP Modern History, AP Economics, AP Psychology, AP Human Geography, AP US Government, AP Comparative Governments, AP Seminar

- **World Languages**

AP French, AP Spanish, AP Chinese

*Not offered 2024-2025, hope to offer again in 2025-2026

“AP Computer science has prepared me for college by challenging me to develop new skills. AP Computer Science will test your ability to get the job done even when you feel like you can't. Attention to detail, perseverance, collaboration are all skills that will allow me to be successful at the collegiate level that AP Computer Science has instilled in me.”

– Class of 2021 graduate

Start Strong!

Take an Honors Course

Honors courses provide challenging studies for highly able students who are capable of pursuing rigorous instruction. These courses provide content and instruction that match students' abilities, achievement levels, and interests.

Honors courses include coursework in Art, Computer Science, English, Health, Mathematics, Music, Science, Social Studies, and World Languages. The curriculum in each honors course includes appropriate adaptations for accelerated and enriched learning for pursuing in-depth studies that require abstract and higher-order thinking skills. Honors courses provide opportunities for students to work independently at an accelerated pace, to engage in more rigorous and complex content and processes, and to develop authentic products that reflect students' understanding of key concepts.

Students in honors courses are expected to maintain at least a B average. Students who receive a grade of C at the end of the first marking period of the semester will be counseled about ways to improve their performance and will be supported by school staff. Students who receive a grade of "D" or "E" over two consecutive marking periods will be considered for removal from honors or advanced level work in the designated course.



The following is a list of courses in the curriculum that can be pursued for honors or advanced credits at Q.O.

Art

- Ceramics 3 / 4
- Advanced Studio

English

- English 9A and 9B
- English 10A and 10B
- English 11A and 11B
- English 12A and 12B

Health

- Comprehensive Health Education

Mathematics

- Geometry A and B
- Precalculus A and B
- Algebra 2 A and B

Music

- Chamber Singers A & B
- Chorus 3 A & B
- Jazz Ensemble A & B*
- Symphonic Band A & B
- Symphonic Orchestra A & B

Science

- Biology A & B
- Chemistry A & B
- Physics A & B

Social Studies

- U.S. History A & B
- National, State, and Local Government A & B
- Modern World History A & B



World Languages

- Modern World Languages - Levels 3 A & B, 4 A & B
- Latin - Levels 3 A & B, 4 A & B

Broaden your Horizons!

Take a higher-level course

The following courses require students to show special ability in the subject:

Art

- Photo 2,3,4
- Ceramics 2,3,4
- Studio Art 1,2,3
- Digital Art, Advanced Digital Art

Computer Science

- CISCO Networking
- Game Development, Advanced Game Dev.

English

- Advanced Journalism

Family and Consumer Sciences

- Child Development Internship

Mathematics

- Calculus A & B

Music

- Guitar 2,3,4
- Piano 2,3,4
- Chorus 3

Science

- Anatomy and Physiology A & B
- Forensics A

Theater

- Advanced Acting



“Taking advanced level art courses allows so many more opportunities for a student who has mastered the basics. In art, one can develop personal expression and style. Creativity has no boundaries because the assignments are much more open ended. In addition, students start to see more art in their everyday lives. This will likely stay with them forever, regardless of any future studies and endeavors.”

Advanced Photography Teacher

Technology / Engineering

- Introduction to Engineering Design
- Principles of Engineering
- Digital Electronics
- Environmental Sustainability
- Aerospace Engineering
- Engineering Design and Development

Prepare yourself for College!

Take an Advanced Placement Course

AP courses are college level courses that you can take while still in high school, culminating in the College Board Advanced Placement exam. At the conclusion of an AP course, you have the opportunity to take the corresponding AP Exam. AP Exams are two- to three-hour exams, given in May, composed of multiple-choice and essay questions. They are graded on a scale of 1 to 5. There is currently no fee for AP exams, the fee is covered by MCPS. Your AP teacher or AP Coordinator will tell you how to register for the May exam.

Are AP courses difficult?

AP courses are usually more demanding than regular high school courses. Most AP classes are comparable to first-year college courses.

Why should I take an AP course?

The extra effort and time you will put into an AP course are will reap several benefits:

- You will have the opportunity to study a subject in depth, at the college level, so you will be more prepared for college work.
- If you receive a qualifying grade on an AP Exam, you may be eligible for advanced placement or course credits at the vast majority of colleges and universities in the United States.
- More than 1,400 institutions in the United States grant sophomore standing (a full year of credit) to students with satisfactory grades on enough AP Exams.





Signature Program Honors

The following Signature Program certificates will be awarded to students at graduation:

Signature Program Distinguished Scholar Certificate

In recognition of outstanding scholarship and achievement in college-level courses, this certificate will be awarded to any student who has:

- Completed a total of five (5) AP level courses.
- Students must complete both the A and B semesters of each AP level course.
 - The exception is AP Microeconomics and AP Macroeconomics, each are only one (1) semester courses.
 - Double-period courses count as only one (1) course.
- Students must earn a semester grade of B or higher for each semester of the AP course.
- Students are highly encouraged to take AP exams and to research colleges and universities that will accept credit for their AP exam scores.

Signature Program Certificate in Advanced Arts

Students who pursue an area of study in the Arts, by participating in five (5) courses, at least one of which is an AP course, will be awarded an Advanced Arts certificate in one of the following areas:

- Art
- Music
- Theatre

Signature Program Certificate in Career Technologies

Students who pursue an area of study in the Career Technologies, by participating in five (5) courses, at least one of which is an AP course, will be awarded a Career Technologies certificate in one of the following areas:

- Computer Science
(Programming & Networking)
- Media and Communication
(Game Development & Video Production)

Signature Program Certificate in Education

This certificate will be awarded to students who complete three (3) levels of Child Development classes, AP Psychology and an internship course or Dual Enrollment course.

Signature Program Certificate in Social Studies/Law

Students have two options for those pursuing an area of studies in the Social Sciences.

- Four (4) Social Studies AP courses and a capstone, “Quest” course
- Two (3) Law courses, one (1) Social Studies AP courses, and Dual Enrollment or an Internship

Signature Program Certificate in Engineering (Project Lead the Way)

This certificate will be awarded to students who completed five (5) required courses for PLTW, three (3) of which can earn them college credit.

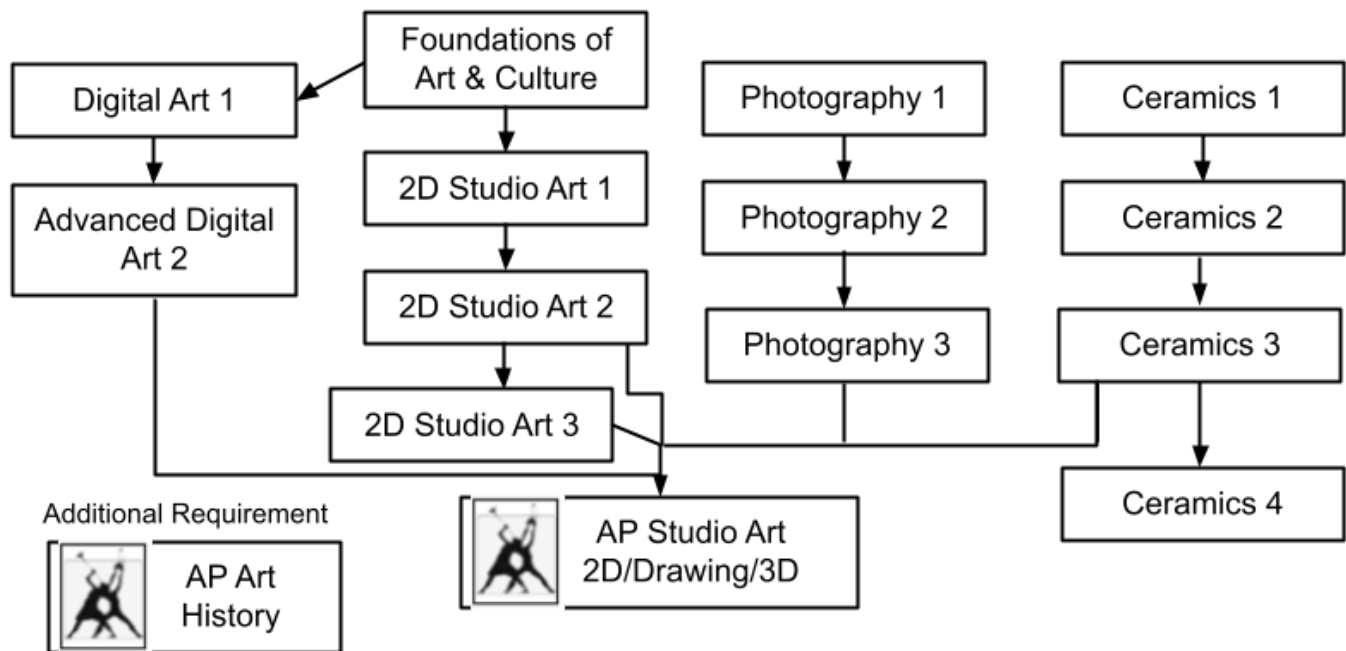
Signature Program Certificate in Advanced Academics

In recognition of program completion, this certificate will be awarded to any student who has completed one college level course with a B or higher grade for each semester and maintained an overall GPA of C or better.

Specific course requirements for each program are highlighted on the next pages.

Signature Program Certificate in Advanced Arts

Visual Art



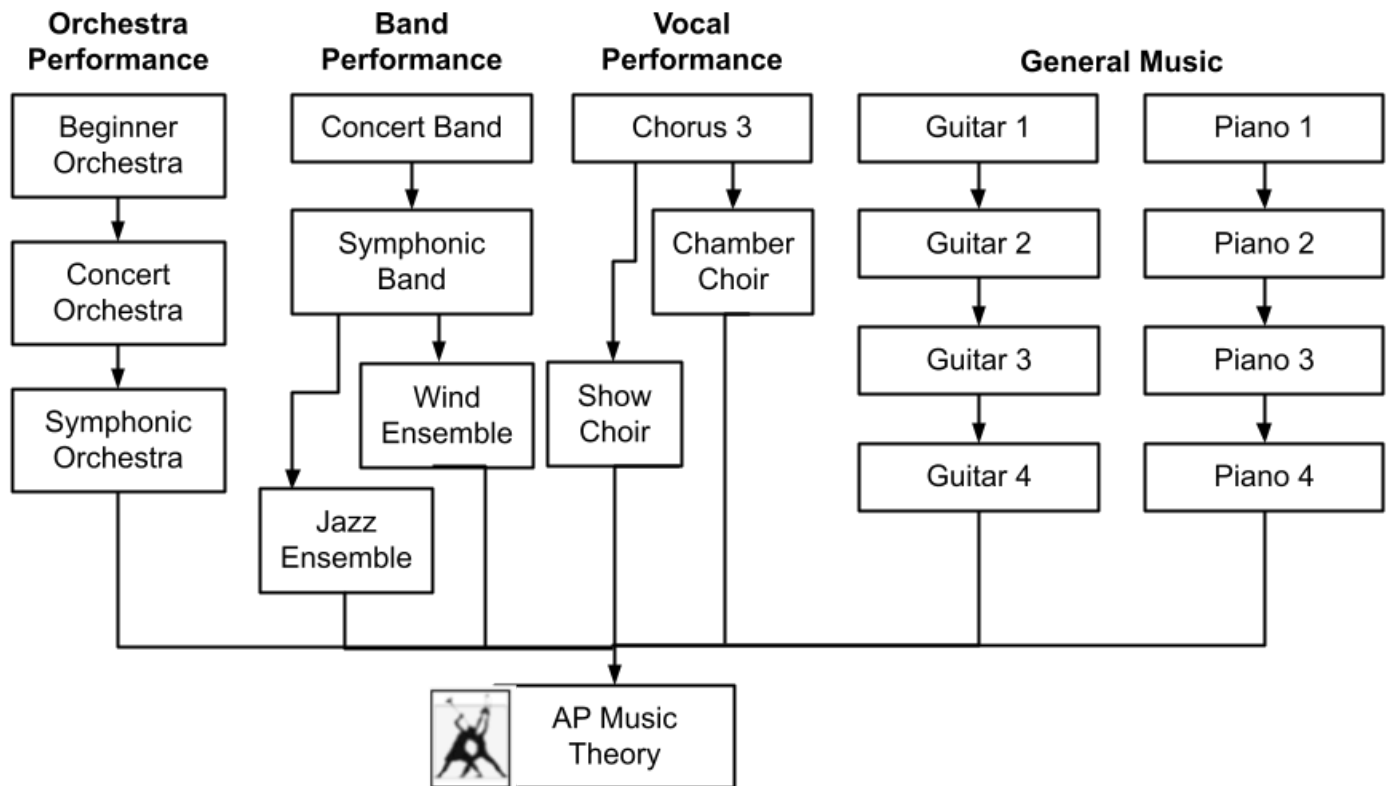
Requirements for Program Completion

1. Completion of three (3) Art Courses, semester grade B or higher.
2. Completion of AP Art History, semester grade B or higher, students are highly encouraged to take the AP exam
3. Completion of AP Studio Art, semester grade B or higher, AP Portfolio Submission to College Board highly encouraged, AP Portfolio Submission to Teacher REQUIRED



Signature Program Certificate in Advanced Arts

Music



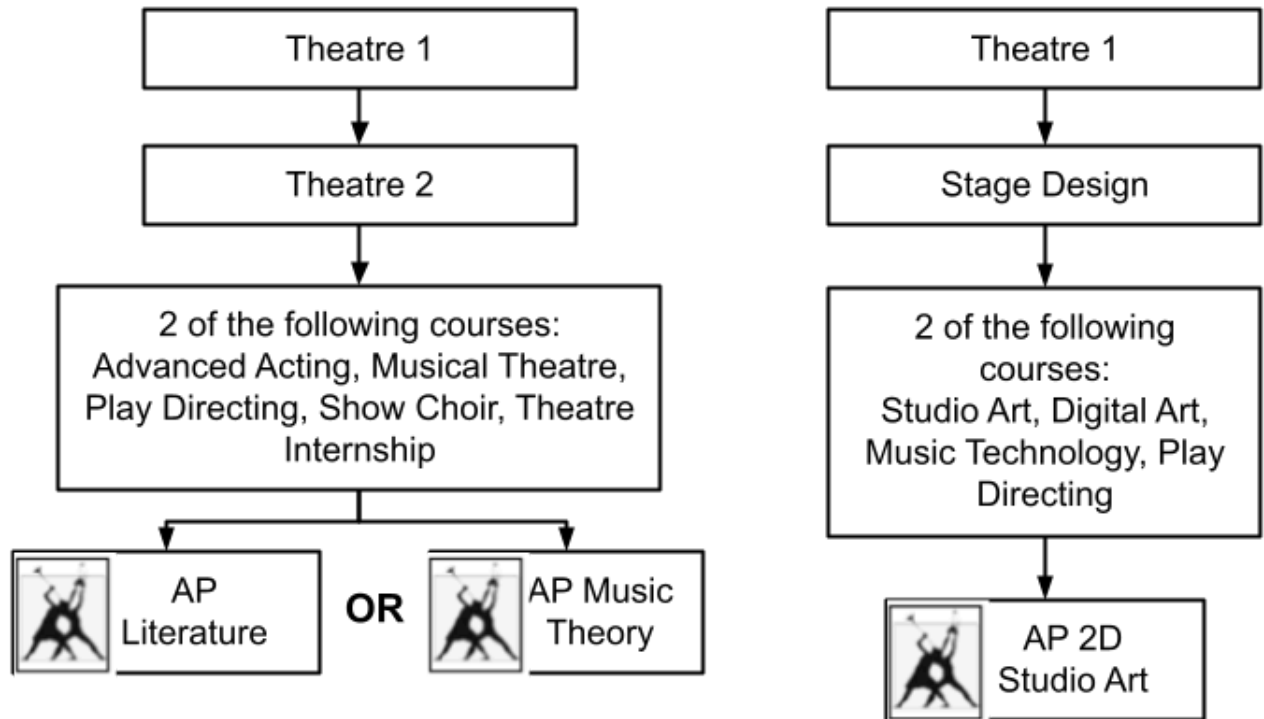
Requirements for Program Completion

1. Completion of four (4) Performance Courses, semester grade B or higher.
OR
Completion of four (4) General Music Courses, semester grade B or higher.
OR
Completion of four (4) Performance/General Music Courses Combined, semester grade B or higher.
2. Completion of AP Music Theory, semester grade B or higher, students are highly encouraged to take the AP exam.

Notes:

- Music Technology does not count towards the AP Music Signature Pathway.

Signature Program Certificate in Advanced Arts Theatre

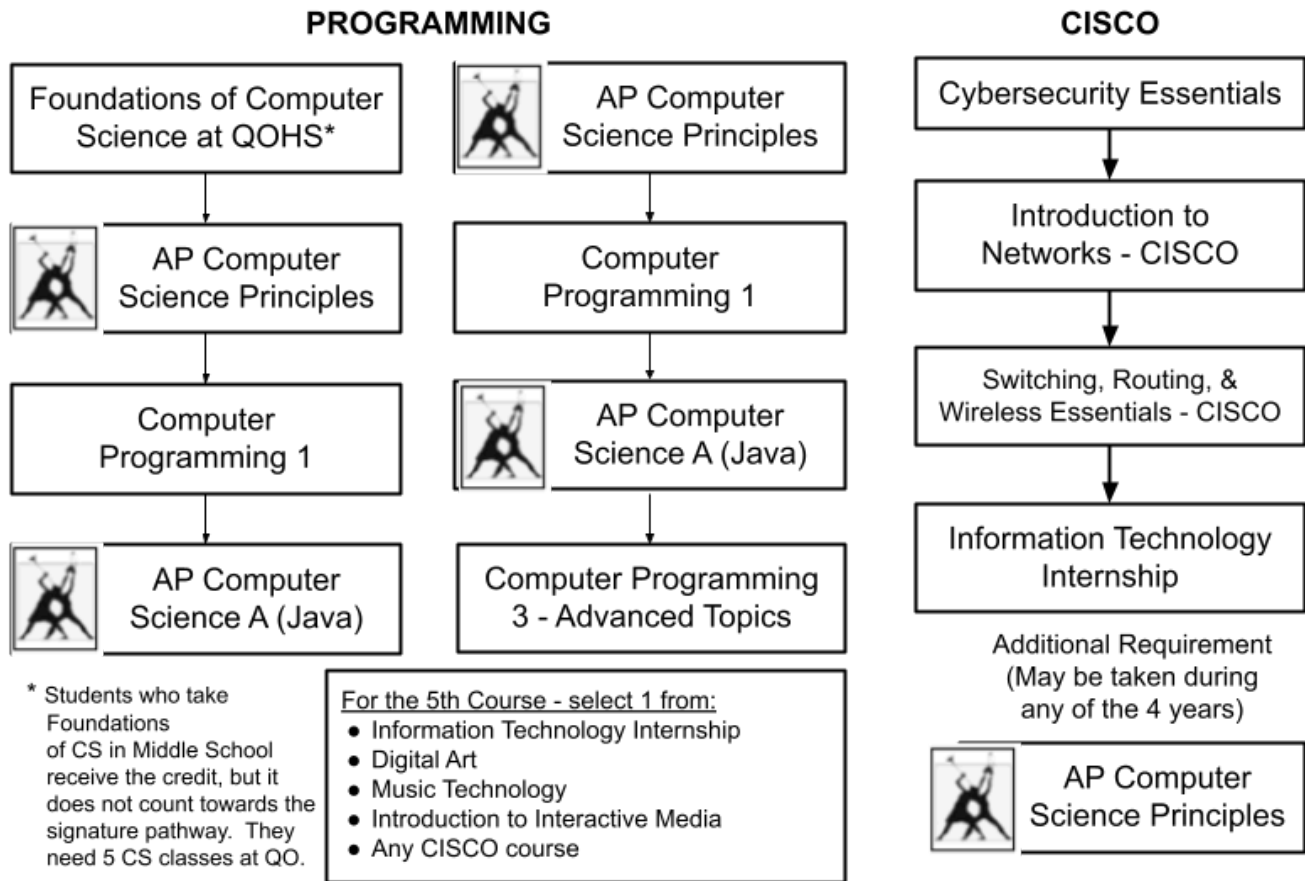


Requirements for Program Completion

1. Completion of four (4) courses within ONE pathway structure, semester grade B or higher.
2. Completion of one (1) AP Course from the chosen pathway structure, semester grade B or higher, students are highly encouraged to take the AP exam.

Signature Program Certificate in Career Technologies

Computer Science



Requirements for Program Completion

1. Completion of five (5) courses, in the strand at Quince Orchard High School, semester grade B or higher.

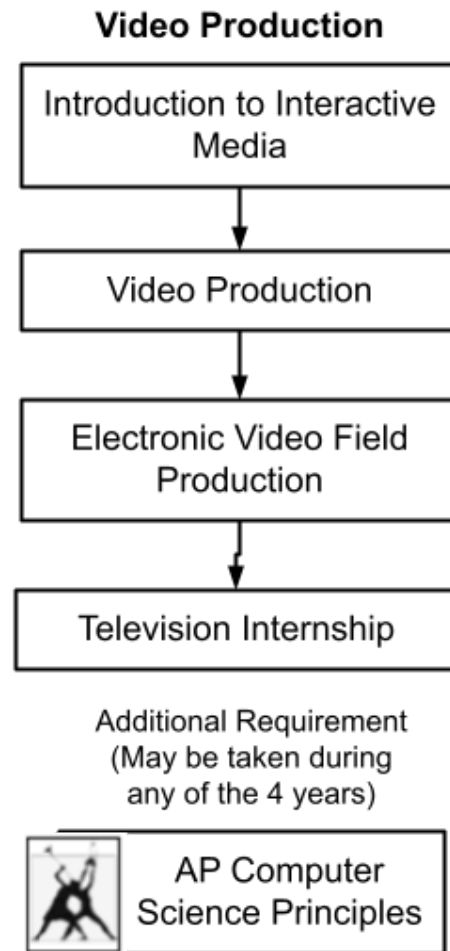
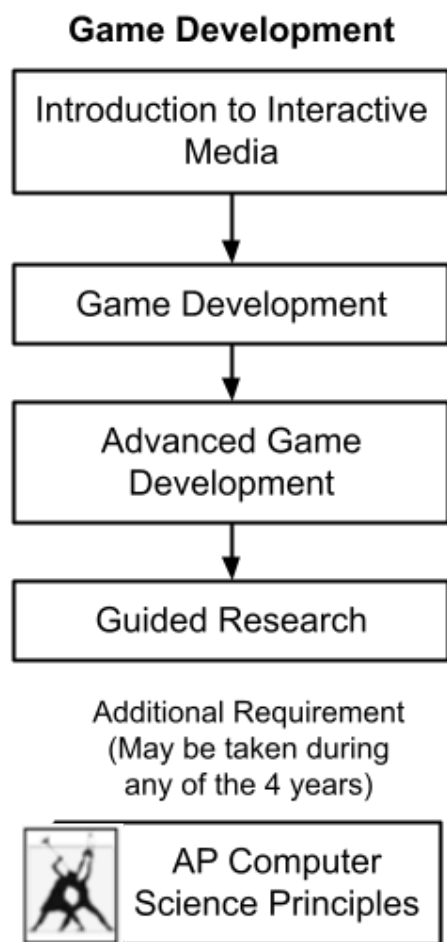
***If FOCS is completed at the middle school, it is recommended that students take Digital Art or Music Technology to earn their Art Credit, these also count as a "5th" course in Computer Science for these students. Students may also substitute Introduction to Engineering Design, any CISCO or any Gaming class to replace taking FOCS at QO.*

2. Students are highly encouraged to take the AP exam(s).

**Earn three college credits at Montgomery College through the MCPS articulation agreement by earning a B or higher in the articulated courses and completing the entire high school plan.*

***CISCO classes did not run in 2024-2025, we hope to offer again in 2025-2026.*

Signature Program Certificate in Career Technologies Media and Communications

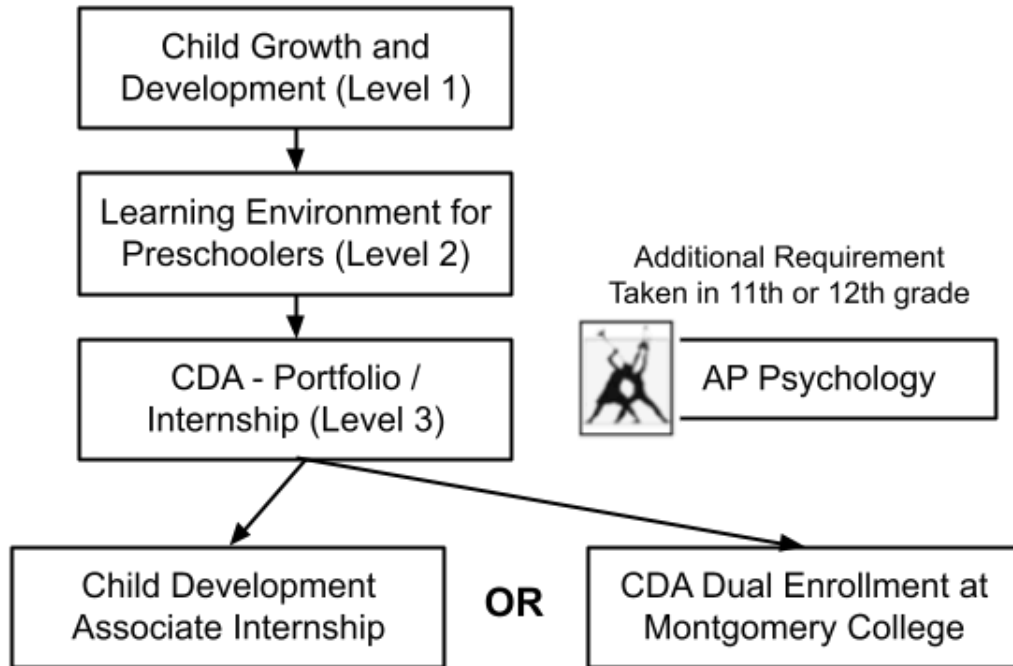


Requirements for Program Completion

1. Completion of five (5) courses, in the strand, semester grade B or higher.
2. Students are highly encouraged to take the AP exam.



Signature Program Certificate in Education



Requirements for Program Completion

1. Completion of all three (3) Child and Adolescent Development courses, semester grade B or higher.
2. Completion of either a Child Development Internship or a Dual Enrollment Course at Montgomery College, semester grade B or higher.
3. Completion of AP Psychology, semester grade B or higher, students are highly encouraged to take the AP exam.



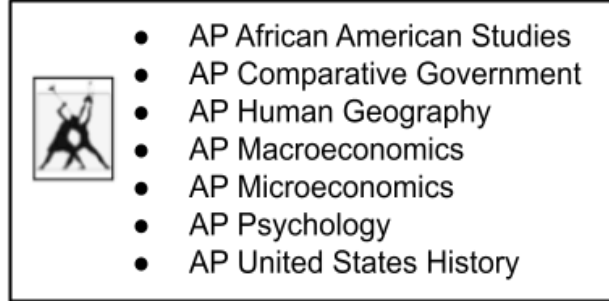
**Certification available through completion of recognized coursework and requirements by the Childcare industry in the State of Maryland*

Signature Program Certificate in Social Studies

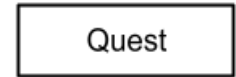
Required Courses:



Select any 2 of the following courses:



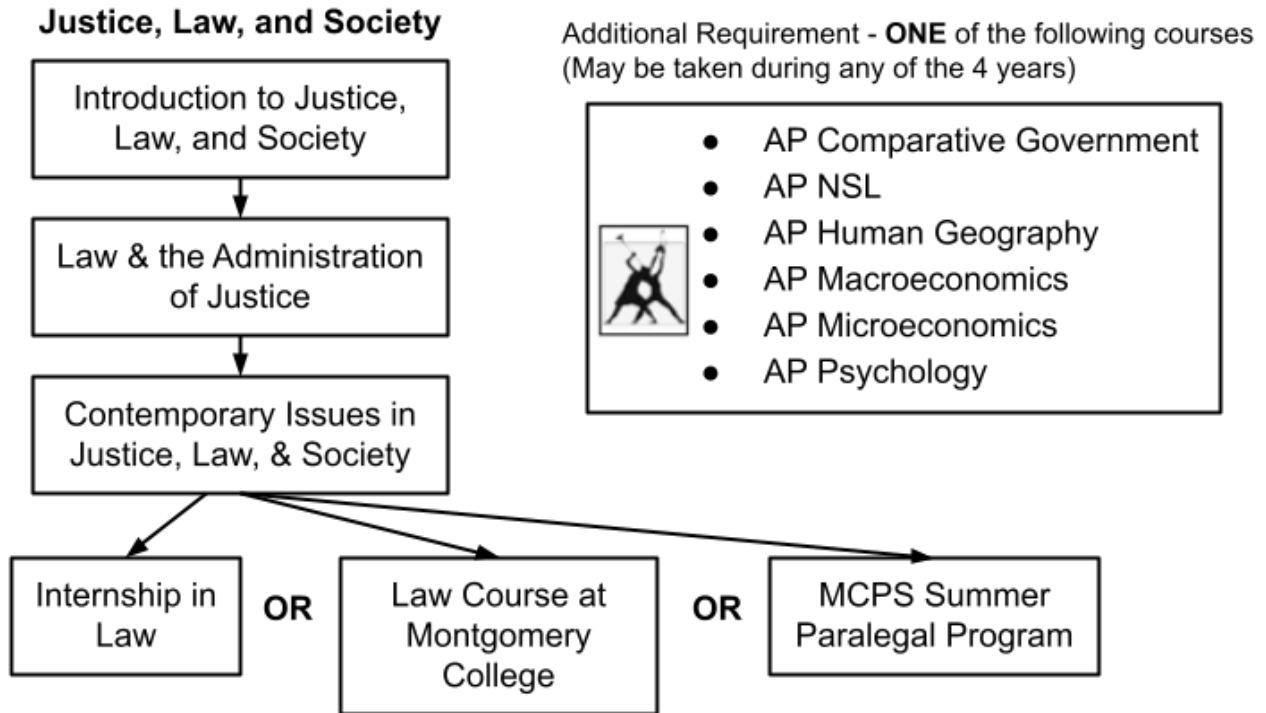
Capstone Course (12th Grade):



Requirements for Program Completion

1. Completion of AP NSL and AP World History, semester grade B or higher, students are highly encouraged to take the AP exam.
 2. Completion of two (2) additional AP Social Studies courses, semester grade B or higher, students are highly encouraged to take the AP exam.
 3. Completion of Quest, semester grade B or higher.
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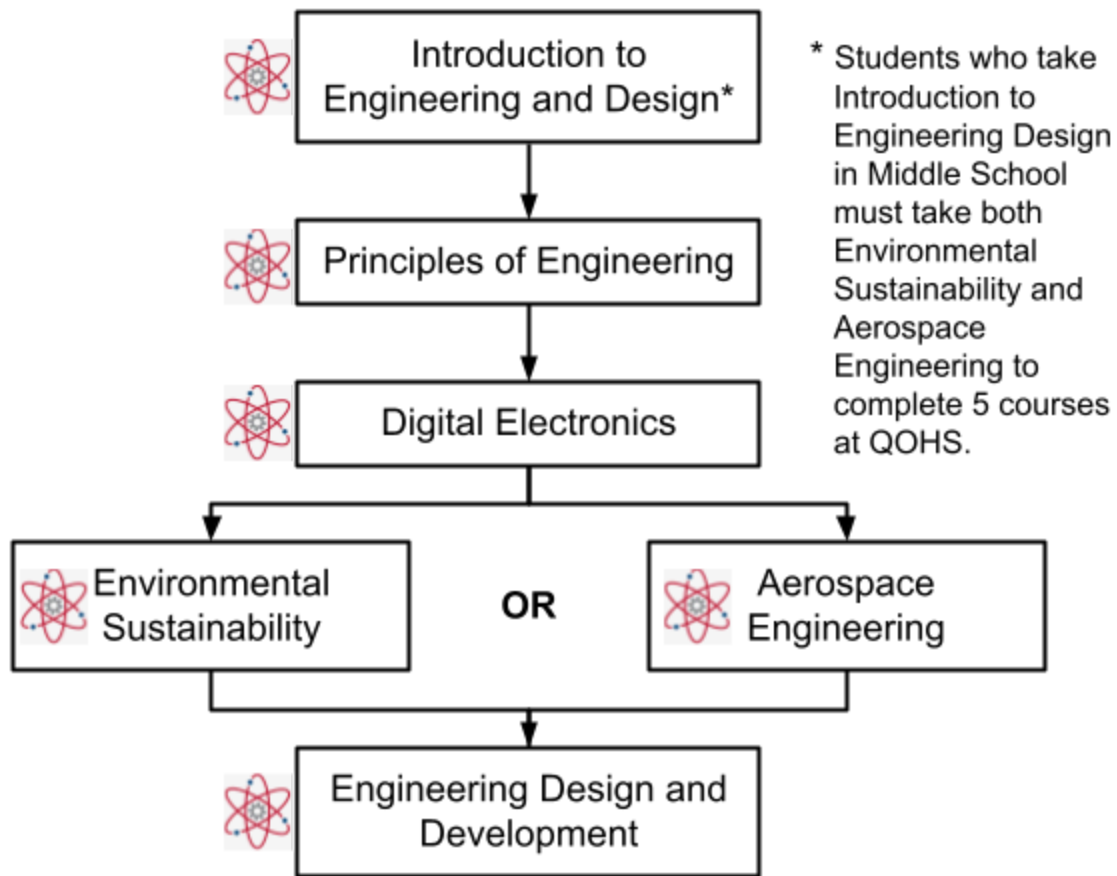
Signature Program Certificate in Law and Society



Requirements for Program Completion

1. Completion of all three (3) law classes, semester grade B or higher.
2. Completion of an Internship in Law, a Dual Enrollment Law course (see approved list), or a MCPS Summer Paralegal Program.
3. Completion of one (1) Social Studies AP class from the list, semester grade B or higher.
4. Students are highly encouraged to take the AP exam for all AP classes.

Signature Program Certificate in Engineering



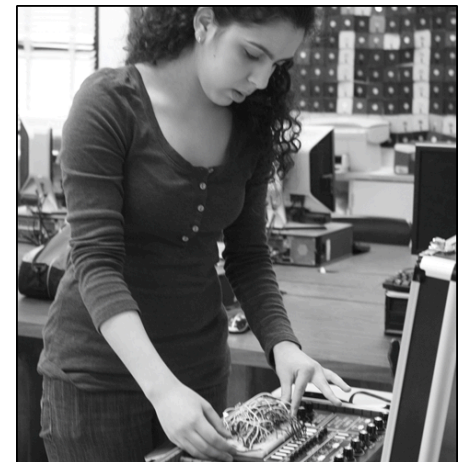
Requirements for Program Completion

1. Completion of 5 courses, in the strand at a high school, semester grade B or higher.

***If IED is completed at the middle school, students will complete both Aerospace Engineering and Environmental Sustainability.*

2. Take the end of the year PLTW exam for each course.

** Earn three college credits from RIT (Rochester Institute of Technology) for each of IED / POE / DE by maintaining an 85% average all four quarters and scoring in the determined levels on the End of Course Assessment.*



**Note that Aerospace did not run as a class in 2023-2024, hope to offer again in 2024-2025*

Computer Science / Career Technologies AP Courses

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❑ **Advanced Placement Computer Science Principles**

Course Description: Advanced Placement Computer Science Principles (APCSP) course is designed for students of high academic ability who have an interest in exploring computer science and who want to prepare for the AP CSP examination which includes one project that is completed as part of the course and digitally submitted. This course, offered in partnership with Code.org, advances student understanding of the central ideas of computer science, engaging students in activities that show how computing changes the world. Through a focus on creativity, students explore technology as a means for solving computational problems, examining computer science's relevance to and impact on the world today. Students will work on different projects to explore computer science concepts and work with peers to create algorithms, protocols, design and test code, and analyze data. Students do not need to have a deep understanding of computer science before taking this course, they will explore concepts and write about the impact those concepts have in different problems and the real-world.

Average Reading Per Night: 1 page

Average Numbers of Papers per Semester: 3-4 large projects

Average Number of Tests per Semester: 5-6 quizzes/tests and small biweekly quizzes

Other Expectations: Attendance is crucial. Work outside of class will be required, and in some cases might require access to a computer, students can work in school in the lab at lunch or before/after school. Students should be prepared to take notes and keep a portfolio of work and information to prepare for the AP exam and showcase their knowledge.

() **Advanced Placement Computer Science Programming 2**

Course Description: The Advanced Placement Computer Science (APCS) course is designed for students of high academic ability who have a strong interest in computer science and who want to prepare for the APCS A examination. In colleges recognizing the APCS examination, a qualifying score gives the student college credit or advanced

standing. The topics covered normally comprise three or more semester hours included in the first year of a computer science curriculum at the college level. Projects will require both rigorous problem definition and program implementation strategies that will be written in the Java programming language. Other course assignments will require developing, tracing, and analyzing code and algorithms while applying various problem solving skill sets. The course also requires work with three different case study programs that includes reading code and pseudocode, writing code, tracing code, and writing about programming.

Average Reading per Night: 4 pages or 30 minutes of note review/homework

Average Numbers of Papers per Semester: approximately 4-5 mini-programs and 2-3 larger programs

Average Number of Tests per Semester: 5-6 quizzes/tests and small biweekly quizzes

Other Expectations: Attendance is crucial. Expect to have to spend one lunch period in the lab for each missed class period. Work outside of class will be required, and in some cases might require programming to be done at home or at school in the lab at lunch or before/after school. Students should have a serious interest in the content and be committed to challenging themselves. Students should be prepared to take notes and keep a portfolio of work and information to prepare for the AP exam and showcase their knowledge.

Engineering College-Level Courses

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☐ **PLTW Introduction to Engineering Design**

Course Description: Introduction to Engineering Design (IED) is a course where students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects like designing a new toy or improving an existing product.

Average Reading Per Night: 1 page/activity preview/review

Average Numbers of Projects per Semester: 2-3

Average Number of Tests per Semester: 3-5

Other Expectations: Students are encouraged to further explore simulations, tools, and testing hardware available to them, in an effort to better experience

engineering. Various Engineering Clubs are available, encouraged, and supported.

☐ **PLTW Principles of Engineering**

Course Description: Principles of Engineering (POE) is a course where students explore a broad range of engineering topics including mechanisms, strength of structure and materials, and automation, and then they apply what they know to take on challenges like designing a self-powered car.

Average Reading Per Night: 15 minutes

Average Numbers of Papers per Semester: None, but there are homework/practice problems that have to be completed occasionally (about 10)

Average Number of Tests per Semester: 12

☐ **PLTW Digital Electronics**

Course Description: Digital Electronics (DE) is a course where students explore the foundations of computing by engaging in circuit design processes to create combinational logic and sequential logic (memory) as electrical engineers do in industry.

Average Reading Per Night: 1 (see other expectations)

Average Numbers of Papers per Semester: 20

Average Number of Tests per Semester: 8

Other Expectations: Some assignments will be in the form of multimedia exercises or information; it is a requirement to complete them before an in-class laboratory investigation. These assignments will allow students to further break down complex concepts into more manageable pieces before a laboratory or an exam.

☐ **PLTW Environmental Sustainability**

Course Description: Environmental Sustainability (ES) is a course where students investigate and design solutions in response to real-world challenges related to clean and abundant drinking water, food supply, and renewable energy.

Average Reading Per Night: 30 minutes

Average Numbers of Papers per Semester: 2

Average Number of Tests per Semester: 2

Other Expectations: This is a project-based, hands-on class that asks you to find your own solutions to problems presented by the instructor. Since you are developing your own solution to these problems, you will be expected to manage your own time to research the problem so you can develop the solution in class.

❑ **PLTW Aerospace Engineering**

Course Description: Aerospace Engineering (AE) is a course where students explore the physics of flight and bring what they're learning to life through hands-on projects like designing a glider and creating a program for an autonomous space rover.

Average Reading Per Night: 1 page/activity preview/review

Average Numbers of Projects per Semester: 2-3

Average Number of Tests per Semester: 3-5

Other Expectations: Students are encouraged to further explore simulations, tools, and testing hardware available to them, in an effort to better experience engineering. Various Engineering Clubs are available, encouraged, and supported.

❑ **PLTW Engineering Design & Development**

Course Description: Engineering Design & Development (EDD) is a course where students identify a real-world challenge and then research, design, and test a solution, ultimately presenting their unique solutions to a panel of engineers.

Average Reading Per Night: 15 minutes

Average Numbers of Papers per Semester: Students will have to record their work in the Engineering Notebook for every class day, starting late 2nd marking period until the end of 4th marking period.

Average Number of Tests per Semester: about 12 assessments

Other Expectations: CAD work as needed for their project (if they are responsible for CAD for their team); Google slides/PowerPoint presentation work (if they are responsible for their team's presentation; market research (if they are responsible for doing market research for their team), etc.

English AP Courses

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☐ **Advanced Placement Seminar (English 10)**

Course Description: AP Seminar is a course where students develop and practice the skills in research, collaboration, and communication that you'll need in any academic discipline. You'll investigate topics in a variety of subject areas, write research-based essays, and design and give presentations both individually and as part of a team.

Average Reading Per Night: 2-4 readings per week, with annotation and written analysis

Average Numbers of Papers per Semester: 6

Other Expectations: Rising AP students are required to participate in the research and collaboration activities.

☐ **Advanced Placement Language and Composition (English 11)**

Course Description: AP Language and Composition A and B are designed for the highly motivated student. Students will read complex non-fiction prose written in a variety of periods and rhetorical contexts. They will learn and practice several high level critical reading strategies, including textual annotation. Students also will strive to become skilled analytical and persuasive writers, in part by writing bi-weekly, in-class, timed essays in preparation for the AP English Language and Composition exam. By passing this exam, students may earn college English credit or advanced preferential placement in English. Incoming students should have a working knowledge of rhetorical strategies; the course will deepen that knowledge. The course model is discussion based, and students should realize that class participation will affect their performance and learning. Students write research-based, argumentative, and rhetorical analysis essays in this class.

Average Reading Per Night: 2-4 readings per week, with annotation and written analysis

Average Numbers of Papers per Semester: 6

Other Expectations: Rising AP students are required to read a variety of short texts during the summer. The written assignments on these texts are due electronically in the first week of school. These should be polished, sophisticated papers.

☐ **Advanced Placement Literature and Composition (English 12)**

Course Description: Able 12th grade students may elect this freshman college-level course as their English program. Within broad guidelines defined at the national level, the program stresses practical application of the principles of literary analysis and the close study of a wide selection of challenging literature, both classical and contemporary. Students deepen their understanding of how literature communicates meaning through form and content by reading and discussing works representative of dominant literary genres and themes. Students increase their precision in thought and expression by applying methods of literary analysis; they also write frequently and revise expository essays. Students are regularly expected to write sample AP essays as timed writings in class. At the end of the course, students should take the annual AP exam in English and may receive college English credit or advanced, preferential placement in English.

Average Reading per Night: 15 pages

Average Numbers of Papers per Semester: 7-8 major papers

Average Number of Tests per Semester: 3-4 major tests, and frequent quizzes

Other Expectations: Students are expected to actively prepare for class discussions by rereading the assigned material, preparing notes, and reviewing discussion questions. Students should be prepared to participate fully in class discussions. Supplementary research related to the study of literature also will be an expectation of the course. Papers often are used as assessment measures.

Fine Arts AP Courses

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☐ **Advanced Placement Art History**

Course Description: Students are introduced to college level art history and prepare for the AP Art History exam. They study the evolution of Western and non-European art in contemporary society by examining the major forms of visual expression in world cultures. Students analyze architecture, sculpture, painting, and the decorative arts within a historical and cultural context. They also focus on the ancient through the contemporary periods of history, as prescribed by the College Board curriculum.

Average Reading per Night: 6-10pages (Text w/ visual pictures)

Average Numbers of Papers per Semester: one major group research project first semester, one 3-5 page term paper first semester. Research project (either museum visit or artist research) during second semester.

Average Number of Tests per Semester: 4-5 chapter tests per semester with semester exam and final in May

Other Expectations: Must be in class daily to view slides, journals, and study guides.

☐ **Advanced Placement Studio Art (Drawing, 2D Design or 3D Design)**

Course Description: This individualized program concentrates on art projects that demonstrate the competencies expected of advanced placement art applicants as identified by the College Board. Portfolios are assembled to meet the submission requirements. Students are to choose one of 3 major concentrations: Drawing Portfolios, 3-D design portfolio, 2-D design portfolios. Each major consists of three parts:

For Drawing and 2D portfolios:

-Quality includes 5 original works

-Sustained Investigation – 15 digital images and responses to prompts; some may be detail and process images. Images demonstrate sustained investigation through practice, experimentation and revision.

For 3D portfolios:

-Quality includes 5 original works

- Sustained Investigation – 15 digital images and responses to prompts; some may be details, second views or process images. Images demonstrate sustained investigation through practice, experimentation and revision.

Average Reading per Night: Instead of requirements, students are expected to work 5-10 hours a week at home

Average Numbers of Papers per Semester: 1 per semester

Average Number of Tests per Semester: None

Other Expectations: At least 24 pieces are needed for the portfolio presentation. Critiques are conducted every two weeks and random progress checks will be held weekly to ensure that all students are working productively towards portfolio completion. Studio management skills are a must. All students will be expected to use their class time toward the completion of the AP portfolio. Both at home and in class assignments will be graded.

❑ **Advanced Placement Music Theory**

Course Description: Students with strong interest and preparation in music prepare to meet the requirements of the College Board for advanced placement in Music Theory. They gain increased fluency in all aspects of music notation while strengthening skills in tonal imagery and tonal memory. Practice in sight-singing, dictation, composition, and improvisation is complemented by listening and score analysis. Fulfilling requirements similar to those of a college music theory course, students read, write, and analyze music of increasing complexity. They study in detail the techniques used to compose, vary, and ornament melodies, and apply these techniques in their own compositions and improvisations. They explore uses of electronic technology in composition.

Average Reading per Night: Varies

Average Numbers of Papers per Semester: none, there will multiple, small in length, formative music compositions

Average Number of Tests per Semester: 15+ formative assessments, with 5-10 summative assessments

Other Expectations: There are daily homework assignments. Material learned is cumulative, so it is important to keep up with the assignments. This is an excellent prep course for college Music Theory and a "must take" for students who are planning to minor or major in music.

Mathematics AP Courses

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❑ **Advanced Placement Precalculus**

Course Description: Taking AP Precalculus prepares you for other college-level mathematics and science courses. During the course, you'll explore everyday situations using mathematical tools and lenses. You'll also develop an understanding of modeling and functions, and examine scenarios through multiple representations. The course framework outlines content and skills needed for careers in mathematics, physics, biology, health science, social science, and data science.

Average Amount of Homework per Night: 30 to 45 minutes of homework per night

Average Number of Tests per Semester: 6 to 8 tests and 6 to 8 quizzes

Other Expectations: Active/focused note-taking, independent and group study, disciplined work habits.

☐ **Advanced Placement Calculus**

Course Description: The topics studied in AP Calculus are those traditionally offered in the first year of calculus in college, and are designed specifically for students who wish to obtain advanced placement in mathematics in college. Concepts are communicated graphically, numerically, analytically, and verbally. The basic topics studied include limits and continuity of functions and derivatives and integrals of algebraic and transcendental functions and their applications in problems. The advanced topics developed and applied include integration techniques. The BC course also includes convergence tests for series, Taylor or Maclaurin series, elementary differential equations, and hyperbolic functions. A graphing calculator is required for the AP examination.

Average Amount of Homework per Night: 30 to 45 minutes of homework per night

Average Number of Tests per Semester: 6 to 8 tests and 6 to 8 quizzes

Other Expectations: Active/focused note-taking, independent and group study, disciplined work habits.

☐ **Advanced Placement Statistics**

Course Description: Students engage in the exploratory analysis of data and make use of graphical and numerical techniques to study patterns and departures from patterns. They generate conjectures about relationships among variables. Association is distinguished from causation. Data sets are collected according to a well-developed plan—census, sample surveys, experiments, and/or observed studies—from which inferences will be made. These data sets lay the groundwork for an ongoing, yearlong project. Students have the flexibility to conduct research and choose from data sets that are representative of their interests, academic goals, and career choices. Students are expected to produce models using probability and simulation. Statistical inference guides the selection of appropriate models. Models and data interact in statistical work; models are used to draw conclusions from data, while the data may support or discredit the model when analyzed with inferential methods. This course is the equivalent of a non-Calculus-based introductory college statistics course. A graphing calculator is required for the advanced placement examination.

Average Reading per Night: 8-10 pages

Average Numbers of Papers per Semester: 1-2

Average Number of Tests per Semester: 6-8

Other Expectations: A strong understanding of math concepts through Algebra II and an ability to explain or confirm an argument in writing. Graphing calculator required for this course.

Science AP Courses

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☐ **Advanced Placement Biology**

Course Description: Biology AP A and AP B are for students with a special interest in and high motivation for an in-depth study of the biological sciences. The emphasis is on laboratory investigation. Biology AP A and AP B build on the concepts covered in Biology A and B, with greater detail in content and with additional topics and laboratory investigations. The courses include topics of the Biology AP Curriculum that can be taught in two semesters. Students are expected to take the Advanced Placement Biology Examination at the end of the course. The AP Biology Curriculum and Exam were revised by College Board in 2012 to create a course that was more inquiry-based with more student-directed investigations. The current topics in Biology AP span Four Big Ideas. Big Idea 1: The process of evolution drives the diversity and unity of life. Big Idea 2: Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis. Big Idea 3: Living systems store, retrieve, transmit and respond to information essential to life processes. Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties.

Prerequisite: Completion of Biology A and B and Chemistry A and B

Average Reading per Night: 5-10 pages

Average Numbers of Papers per Semester: 4-5 Formal Lab Reports

Average Number of Tests per Semester: 8-10 tests

Other Expectations: Performance of some portion of each of the thirteen 2012 AP Biology Investigative Labs

☐ **Advanced Placement Chemistry**

Course Description: Chemistry AP A and AP B are designed for the highly motivated student who wishes to achieve additional skills to ensure greater success in first-year

chemistry at the college level. This course includes topics of the AP Chemistry curriculum that can be taught in two semesters. In Chemistry AP A and AP B, the emphasis is on problem solving, laboratory skills, and chemical investigations. In Chemistry AP the topics are atomic theory, chemical bonding, phases of matter, solutions, types of reactions and equations, equilibrium, reaction kinetics, and thermodynamics. Students are expected to participate in the AP exam at the end of the course.

Prerequisite: Completion of Chemistry A and B.

Average Reading per Night: about 10 pages; plus problem solving HW= 40-50 min total time

Average Numbers of Projects per Semester: 2

Average Number of Tests per Semester: 7 - 9 Tests plus regular quizzes and labs

Other Expectations: The course is double period (hence the heavy homework schedule) and is very lab oriented - so lots of lab work and lab reports. The lab component is actually great fun.

☐ **Advanced Placement Environmental Science**

Course Description: This course provides 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 and/or preventing them. Laboratory and field investigations provide opportunities to test concepts and principles that are introduced in the classroom, and to explore specific problems in ways that are challenging, realistic, and relevant to their lives. Students are expected to take the AP Environmental Science exam at the end of the course. Topics for the course are those described by the Advanced Placement Program of the College Board.

Prerequisite: Completion of Biology and Chemistry Concurrent

Average Reading per Night: 8-10 pages or online lecture

Average Number of Projects per Semester: 2

Other Expectations: To be successful, it is recommended that students have completed biology and chemistry with at least a B and have taken at least one honors level course.

☐ **Advanced Placement Physics 1: 1-d and 2-d Kinematics, Forces, Energy, Momentum, Gravitation and Circular Motion, Torque, Simple harmonic motion oscillations, Static charge, DC circuits**

Course Description: This is a single period course. AP Physics 1 is designed for students who wish to expand their understanding of physics beyond that expected of a first-year student. The content and activities are drawn from the Advanced Placement curriculum in physics. Students who complete the course are encouraged to take the AP Physics1 examination, which may earn them college credit or advanced standing.

Average Reading per Night: Problem Solving is approx. 5 hours a week

Average Numbers of Papers per Semester: None

Average Number of Tests per Semester: 7 (every 2-3 weeks)

Other Expectations: Earned an A or B in honors physics

Co-requisite: Enrollment in Calculus A and B

☐ **Advanced Placement Physics - Mechanics (single period only)**

Course Description: This is a single period course. AP Physics 1 is designed for students who wish to expand their understanding of physics beyond that expected of a first year student. The content and activities are drawn from the Advanced Placement curriculum in physics. Students who complete the course are encouraged to take the AAP Physics 2 or P Physics – C(Mechanics) examination, which may earn them college credit or advanced standing. Calculus is used in class instruction for this course. Topics covered in AP Physics include mechanics and vector analysis, kinematics, particle dynamics, work, momentum, collisions between moving bodies, rigid body motion, gravity, planetary motion, harmonic oscillations, electricity, and electric circuits.

Average Reading per Night: Problem Solving is approx. 5 hours a week

Average Numbers of Papers per Semester: None

Average Number of Tests per Semester: 7 (every 2-3 weeks)

Other Expectations: Completion of Honor Precalculus, Physics A and B (recommended)

Co-requisite: Enrollment in Calculus A and B

☐ **Advanced Placement Physics 2- Fluid Mechanics, Thermodynamics, Electromagnetism, Optics, and Modern Physics (single period only)**

Course Description: This is a single period course. AP Physics 2 is designed for students who wish to expand their understanding of physics beyond that expected of a

first year student. The content and activities are drawn from the Advanced Placement curriculum in physics. Students who complete the course are encouraged to take the AP Physics 2 examination, which may earn them college credit or advanced standing. Calculus is used in class instruction for this course.

Topics covered in AP Physics 2 include fluid mechanics, thermodynamics, electromagnetism, optics, and modern physics.

Average Reading per Night: Problem Solving is approx. 5 hours a week

Average Numbers of Papers per Semester: 1-2

Average Number of Tests per Semester: 7 (every 2-3 weeks)

Other Expectations: Completion of AP Physics or an A in Honors Physics

Social Studies AP Courses

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☐ **Advanced Placement African American Studies**

Course Description: AP African American Studies is an interdisciplinary course that examines the diversity of African American experiences through direct encounters with authentic and varied sources. Students explore key topics that extend from early African kingdoms to the ongoing challenges and achievements of the contemporary moment. Given the interdisciplinary character of African American studies, students in the course will develop skills across multiple fields, with an emphasis on developing historical, literary, visual, and data analysis skills. This course foregrounds a study of the diversity of Black communities in the United States within the broader context of Africa and the African diaspora.

Average Reading per Night: 8-15 pages

Average Numbers of Papers per Semester: One

Average Number of Tests per Semester: 11 Chapter Tests and 4 Unit Exams

Other Expectations: Students should have a serious interest in the content and be committed to challenging themselves. Success of seminars and debates depends on keeping up with reading and research inside and outside of class.

☐ **Advanced Placement National, State, and Local Government and Politics**

Course Description: This course is a yearlong survey of American government. Students use college level textbooks and engage in seminars, simulations, discussions, and debates. The course combines the content and skill development of Advanced Placement U.S. Government and Politics and National, State, and Local Government.

Students examine the structure and function of American government and politics, beginning with an in-depth analysis of the Constitution as the foundation of the American political system. Next, they study the three branches of government as well as the administrative agencies that support each branch, the role of political behavior in the democratic process, and the workings of political parties and interest groups. Throughout the course, students use the concepts of rights and responsibilities to help them make judgments about the workings of the American government and politics. This course prepares students for the AP U.S. Government and Politics examination and the Maryland State Government High School Assessment. Note: Advanced Placement National State, and Local Government and Politics may be used to satisfy the graduation requirement of a year in NSL A and B.

Average Reading per Night: 8-15 pages

Average Numbers of Papers per Semester: One

Average Number of Tests per Semester: 11 Chapter Tests and 4 Unit Exams

Other Expectations: Students should have a serious interest in the content and be committed to challenging themselves. Success of seminars and debates depends on keeping up with reading and research inside and outside of class.

☐ **Advanced Placement Comparative Government and Politics**

Course Description: This course is for students desiring a freshman college level course in comparative government. Students use college level textbooks and engage in seminars, simulations, discussions, and debates. The course is both a survey of the various forms of government found throughout the world and an in-depth study of specific governments and approaches to politics. Students begin by examining the concept of public authority and the sources of political power. They analyze the relationship between state and society and between the citizen and the state. Students compare the structure of governmental institutions in different countries and learn how each structure affects society in general and individuals in particular. Throughout the course, students focus on the concept of political change and the different methods used to effect such change. This course prepares students for the AP Comparative Government and Politics examination.

Average Reading per Night: 8-12 pages

Average Numbers of Papers per Semester: None

Average Number of Tests per Semester: 10

Other Expectations: Four chapter summaries and 2 simulations required per semester

❑ **Advanced Placement Economics: Macroeconomics**

Course Description: This course is for students interested in college level work in economics. Study begins with fundamental economic concepts such as scarcity, opportunity costs, production possibilities, specialization, comparative advantage, demand, supply, and price determination. Major topics include measurement of economic performance, national income and price determination, and international economics and growth. Students use a college textbook, examine economic topics in depth, conduct basic economic research, read and write widely, and produce a variety of products. This course prepares students for the AP Macroeconomics exam. A more detailed description of the course can be found on the College Board website. Basic math skills are needed but not any advanced coursework. Calculators are not used on the AP exams in Economics so the problems are kept very basic.

Average Reading per Night: Five pages, approximately one chapter per week

Average Numbers of Papers per Semester: Two projects

Average Number of Tests per Semester: Four unit tests; weekly chapter quizzes

Other Expectations: Participate in class discussions; this is not a straight lecture class. Complete economic theory problems and applications to improve learning of material. In addition to major tests, there are weekly chapter quizzes. An optional marking period project related to economic theory is done.

❑ **Advanced Placement Economics: Microeconomics**

Course Description: This course is for advanced students interested in college level work in economics and/or gaining advanced standing in college. The course begins with a study of fundamental economic concepts such as scarcity, opportunity costs, production possibilities, specialization, and comparative advantage. Major topics include the nature of functions of product markets, factor markets, and efficiency, equity, and the role of government. Students use a college textbook, examine economic topics in depth, and conduct basic economic research. This course prepares students for the AP Economics: Microeconomics examination. A detailed description of the course can be found on the College Board website.

Average Reading per Night: 8-10 pages

Average Numbers of Papers per Semester: Two projects

Average Number of Tests per Semester: Four

Other Expectations: Participate in class discussions; this is not a straight lecture class. Complete economic theory problems and applications to improve learning

of material. In addition to major tests, there are weekly chapter quizzes. An optional marking period project related to economic theory is offered.

☐ **Advanced Placement Psychology**

Course Description: This course is designed for students interested in a college-level course. Topics include trends and schools of modern psychology, characteristics and methods of psychological research, learning, perception, motivation, and the life cycle. This course differs from Psychology 1 in that students use a college textbook, examine topics in greater depth, participate more in research and experimentation, read and write more extensively, and produce a variety of products.

Average Reading per Night: 10-15 pages of textbook reading

Average Numbers of Papers per Semester: One project

Average Number of Tests per Semester: Six exams

Other Expectations: Grades are divided between formative (50%), summative (40%) assessments and homework (10%). Summative assessments include the end of the unit exams and semester project. There is a non-written research project in the first semester, and students will be conducting and presenting their own experiments in the second semester.

☐ **Advanced Placement Human Geography**

Course Description: This course is for students who desire a college level course in geography. The purpose of the AP course in Human Geography is to introduce 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 analyze human social organization and its environmental consequences. They also learn about the methods and tools geographers use in their science and practice. This course prepares students for the AP Human Geography examination.

Average Reading per Night: 5-6 pages

Average Numbers of Papers per Semester: 1-2

Average Number of Tests per Semester: 4

Other Expectations: Daily attendance, data analysis (the expectation is you will work to learn a variety of data reporting methods and make use of such data), thought and discussion during class, understanding this is college material.

☐ **Advanced Placement World History**

Course Description: This course is for students who desire a college level course in world history. Students use college level textbooks and engage in seminars, discussions, and debates. The purpose of the AP World History course is to develop greater understanding of the evolution of global processes and contacts in interactions with different types of human societies. This understanding is advanced through a combination of selective factual knowledge and appropriate analytical skills. The chronological time frame is from 1000 to the present. This course prepares students for the AP World History exam.

Average Reading per Night: 8 pages

Average Numbers of Papers per Semester: Online reading quizzes every chapter, 4/5 essays

Average Number of Tests per Semester: 4

☐ **Advanced Placement U.S. History**

Course Description: This course is for students desiring a freshman college level course in United States history. The course is a survey of our country's history from 1607 to the present, using a college level text and requiring college level writing and discussion. This course prepares students for the AP U.S. History exam.

Average Reading per Night: Course is by units and each unit has a different number of chapters. Some units have 2 or 3 or 4 chapters. Chapters can be 20 pages.

Average Numbers of Papers per Semester: 1

Average Number of Tests per Semester: 6

Other Expectations: Taking notes in class, keeping up with the reading, and primary source analysis. Students need to be prepared to form historical opinions and defend these opinions using a variety of sources.

World Languages

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☐ **Advanced Placement Language Courses (French, Spanish, Chinese)**

Course Description: This course is for capable World Language students interested in a college level course and/or gaining advanced standing in college. Using the MCPS World Language Program of Studies, students will concentrate on developing proficiency in speaking, listening, reading, and writing. The AP Language exam is

rigorous and demands a high level of student proficiency. In addition, this course will place emphasis on the mastery of linguistic competencies at a high level of proficiency.

Average Reading per Night: 30 minutes of homework per night

Average Numbers of Papers per Semester: One every two weeks

Average Number of Tests per Semester: One every two weeks