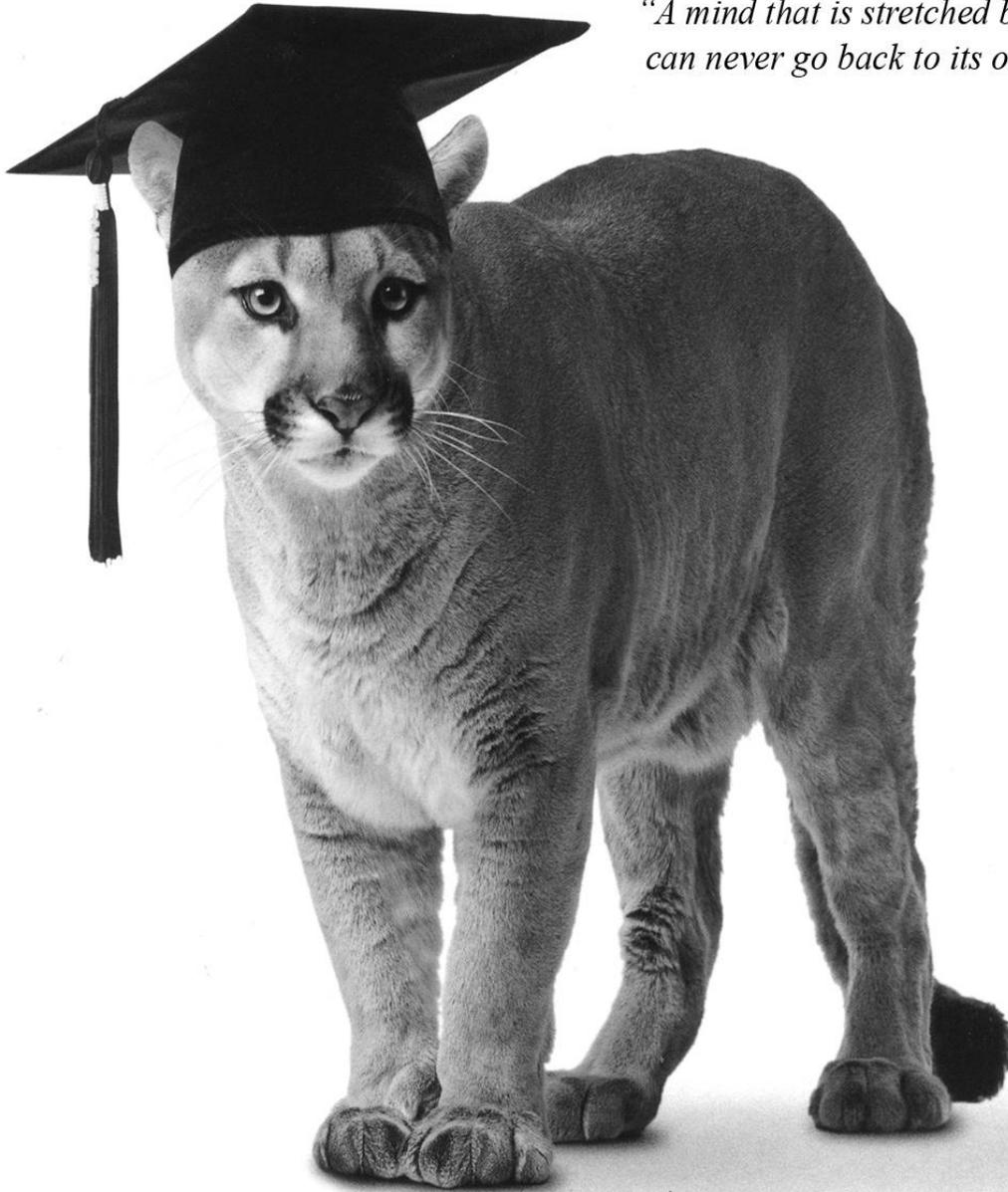


*“A mind that is stretched by a new experience
can never go back to its old dimensions.”*



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

2022-2023



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

Mrs. Elizabeth Thomas

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**

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

- **Computer Science**

AP Computer Programming, Computer Networking, Game Design

- **English**

AP Language, AP Literature, Advanced Journalism

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

Teaching Internship

- **World Languages**

AP French, AP Spanish, AP Chinese

- **Math**

AP Calculus, AP Statistics

- **Music/Performance Arts**

Advanced Band, Advanced Orchestra, Advanced Chorus, AP Music Theory, Advanced Acting

- **Science**

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

- **Social Studies**

AP European History, AP US History, AP Modern History, AP Economics, AP Psychology, AP Human Geography, AP US Government, AP Comparative Governments

“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

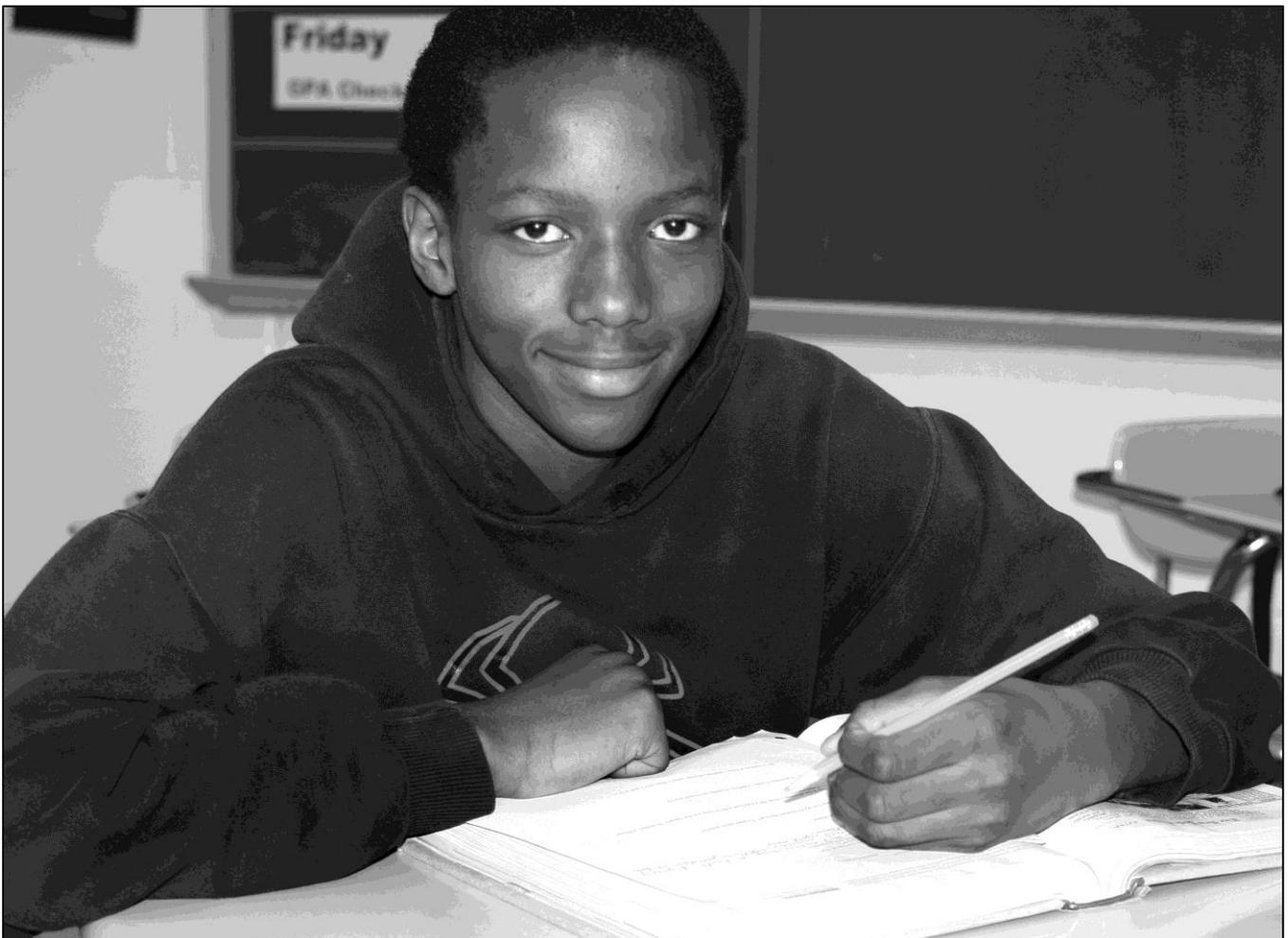
Start Strong!

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 course work in Art, Computer Science, English, World Languages, Mathematics, Music, Science, and Social Studies. 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.

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

World Languages

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

Social Studies

- U.S. History A & B
- National, State, and Local Government A & B
- Modern World History 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 Networks, Switching, Routing, and Wireless
- Computer Programming 1
- Game Development, Advanced Game Dev.

English

- Advanced Journalism

Family and Consumer Sciences

- Learning Environment for Preschoolers
- Child Development Internship and Portfolio

Mathematics

- Calculus A & B
- Multivariable Calculus

Music

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

Science

- Anatomy and Physiology A & B
- Forensics A

Technology

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

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

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 a \$95 exam fee. If you need financial aid, contact the signature coordinators about a fee reduction. Your AP teacher or AP Coordinator will tell you how to register for the May exam.

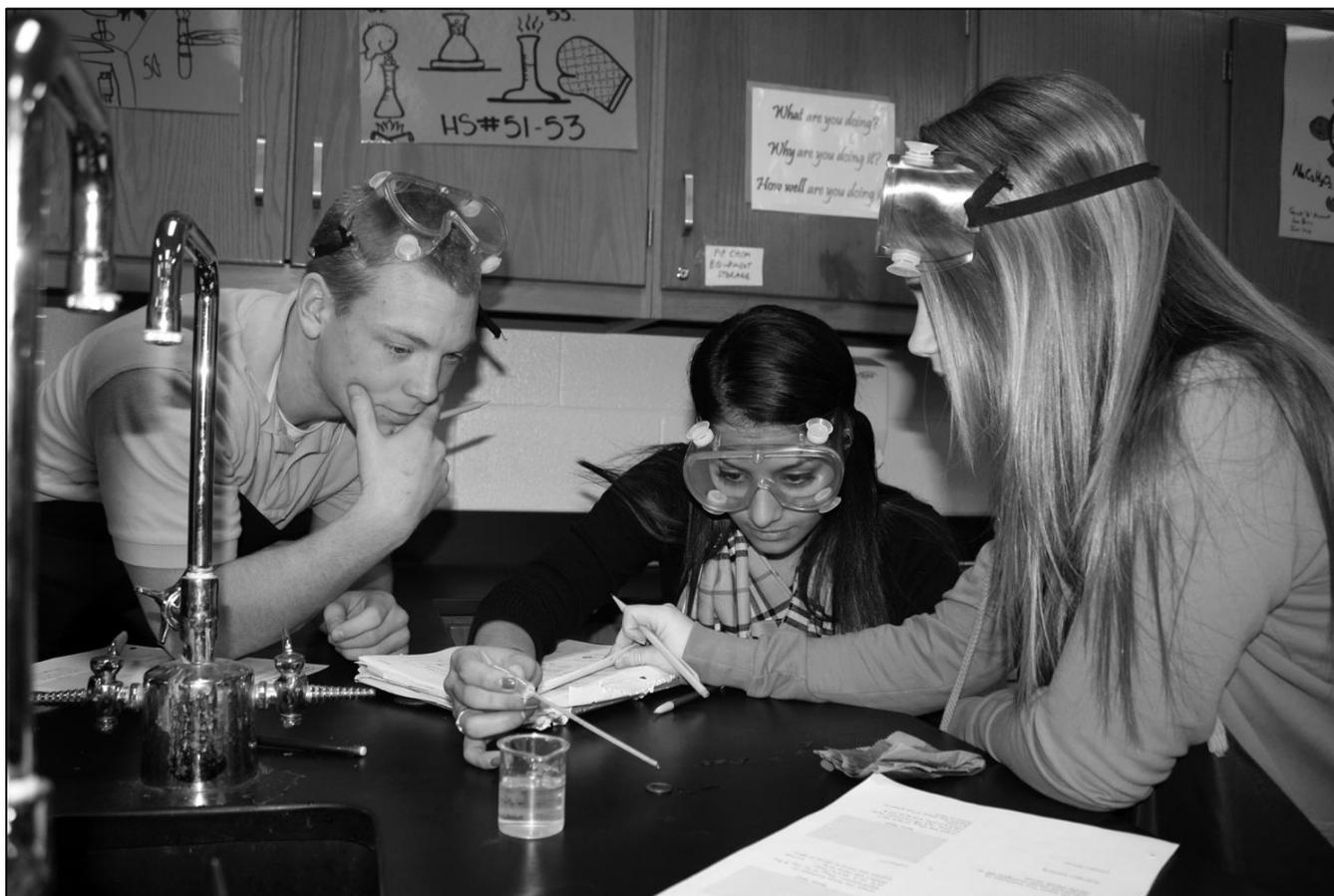
Are AP courses difficult?

AP courses are usually more demanding than regular high schools 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 AP NSL by 10th grade with a grade of C or higher.
- Completed at least 2 AP classes during the 11th grade, one of which must be in English or Math, with a grade of C or higher.
- Completed 2 additional AP classes during 12th grade, with a grade of C or higher.
- Taken at least 5 AP exams during high school.

Signature Program Certificate in Advanced Arts

Students who pursue an area of study in the Arts, by participating in 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
- Computer Science
- Media and Communication
- Music

Signature Program Certificate in Education

This certificate will be awarded to students who complete 3 levels of Child Development classes, AP Psychology and an internship course.

Signature Program Certificate in Social Studies/Law

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

- 4 Social Studies AP courses and a capstone, “Quest” course
- 3 Law courses and 2 Social Studies AP courses

Signature Program Certificate in Engineering (Project Lead the Way)

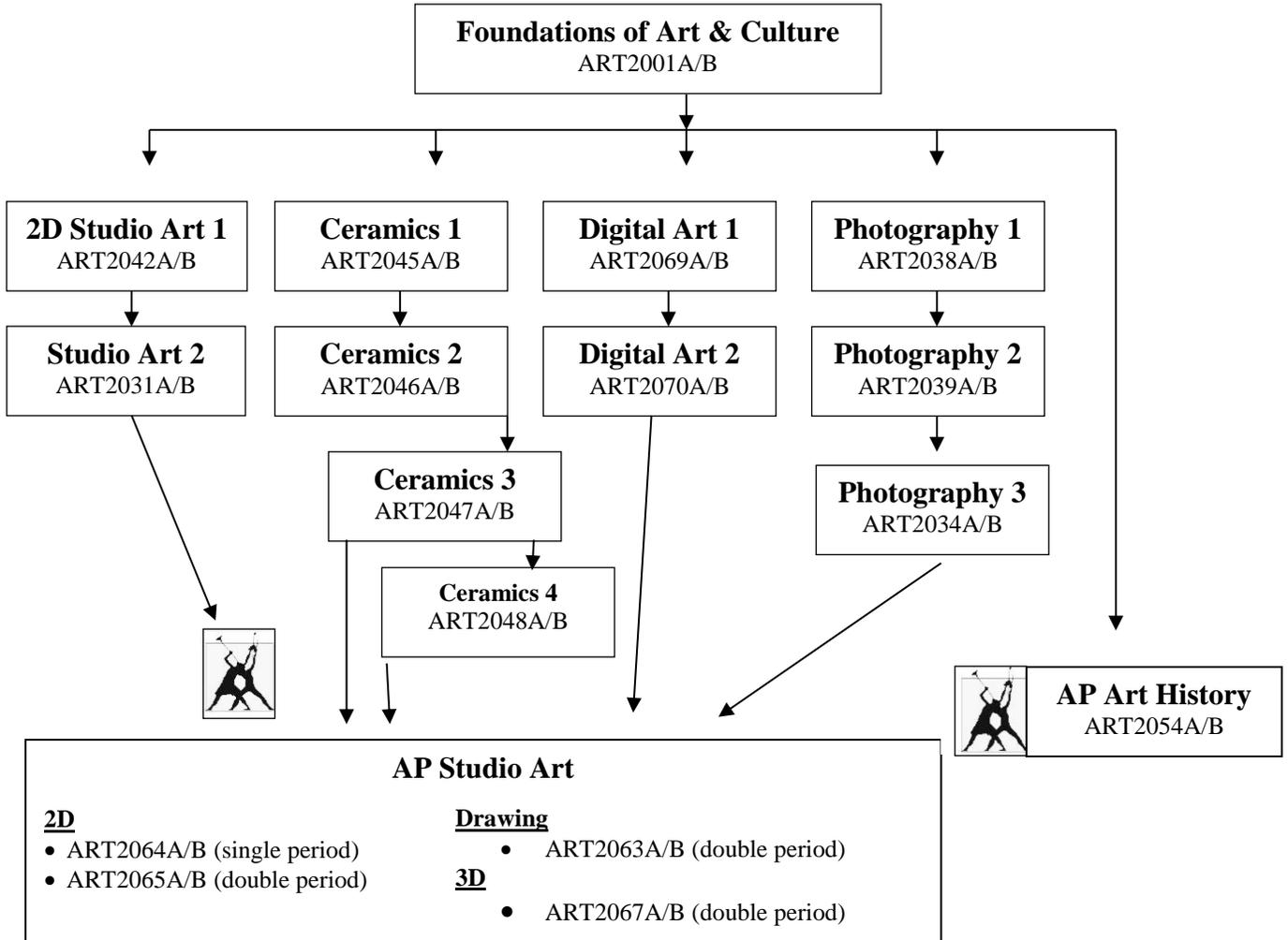
This certificate will be awarded to students who completed all 5 required courses for PLTW, 4 of which can earn them college credit.

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 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

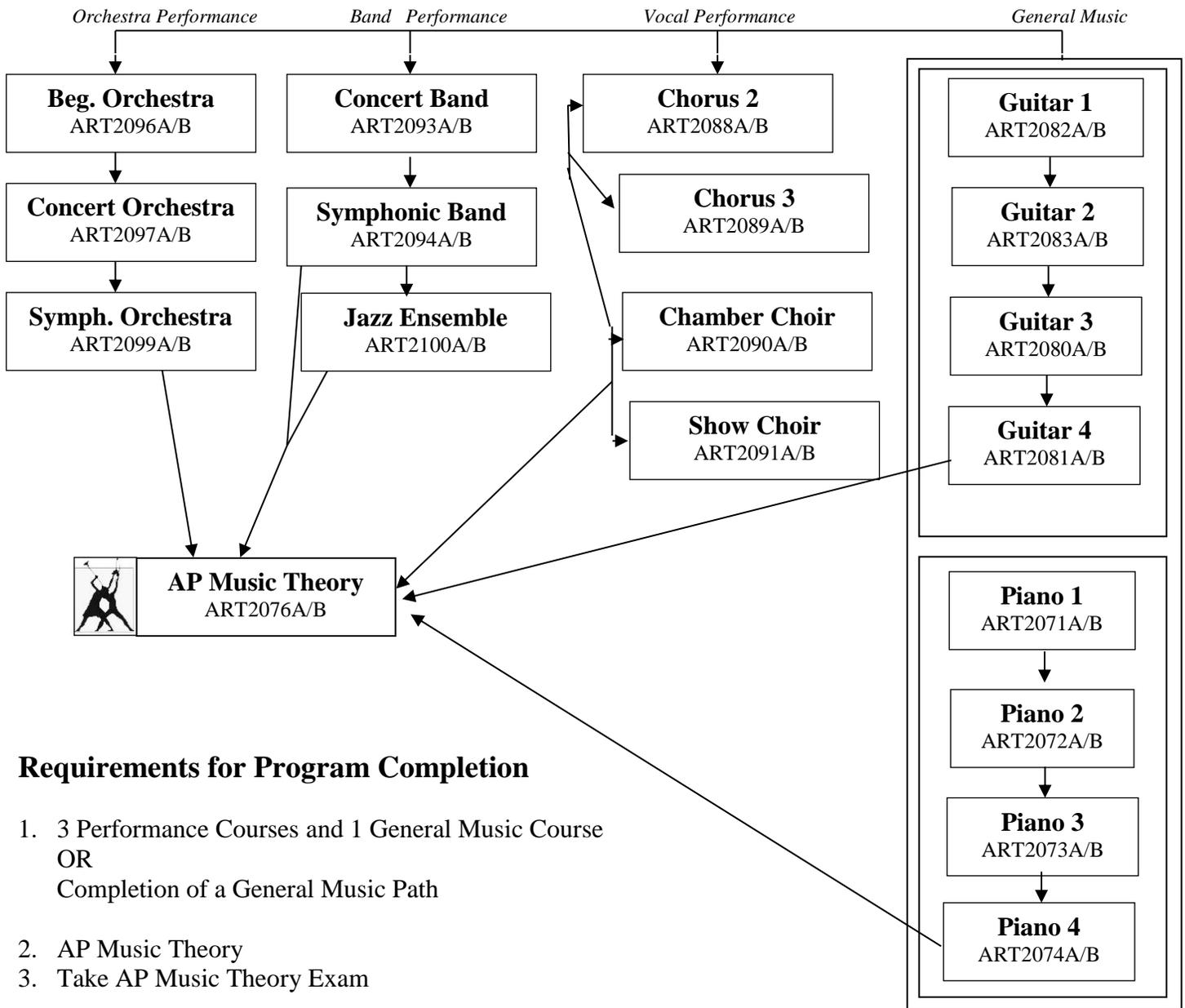


Requirements for Program Completion

1. 3 Art Courses
2. AP Art History
3. AP Studio Art
4. AP Portfolio Submission



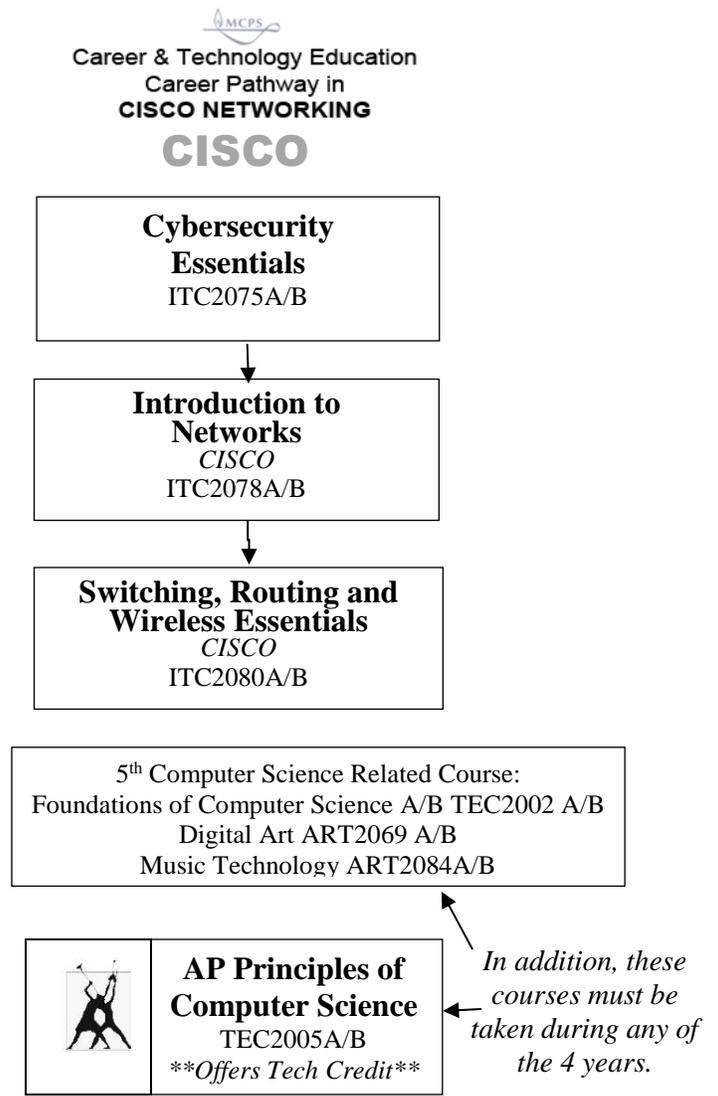
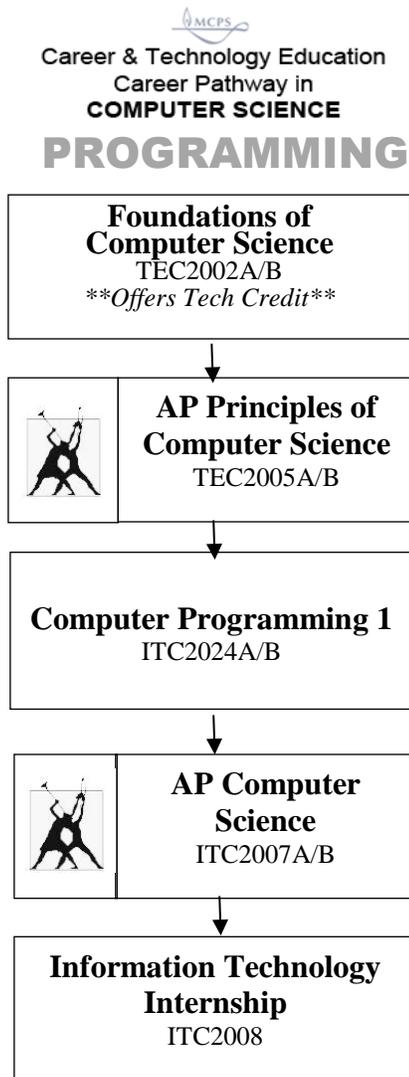
Signature Program Certificate in Advanced Arts Music Performance



Requirements for Program Completion

1. 3 Performance Courses and 1 General Music Course
OR
Completion of a General Music Path
2. AP Music Theory
3. Take AP Music Theory Exam

Signature Program Certificate in Advanced Arts Computer Science



**RECOMMENDED:
Digital Art or Music Technology as art credit**

Requirements for Program Completion

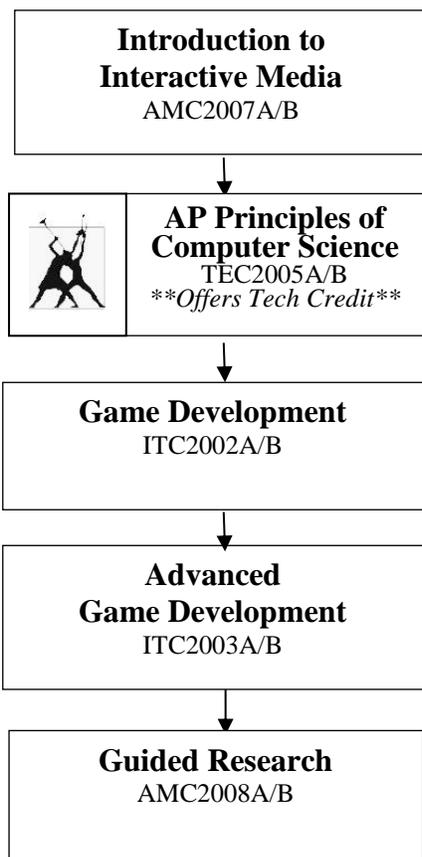
1. Completion of 5 courses, in the strand at a high school.
***If FOCS is completed at the middle school, students may substitute Digital Art or Music Technology and earn an Art Credit or CISCO or Gaming class to replace taking FOCS at QO.*
2. Take the College Board exam for both of the AP courses in the Programming sequence and the exam for AP CSP in the CISCO sequence.

**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.*

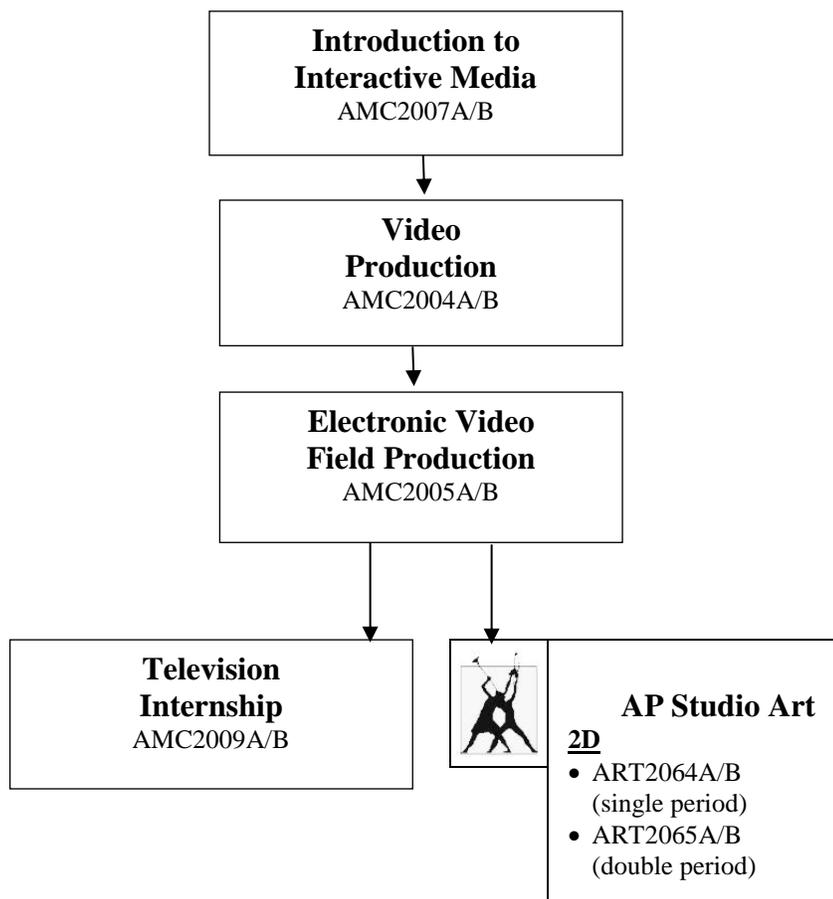


Signature Program Certificate in Advanced Arts Media and Communications

MCPS
Career & Technology Education
Career Pathway in
MULTIMEDIA & INTERACTIVE TECHNOLOGIES
GAMING



MCPS
Career & Technology Education
Career Pathway in
MEDIA BROADCASTING TECHNICIAN
VIDEO PRODUCTION



RECOMMENDED:
Digital Art or Music Technology as art credit



Requirements for Program Completion

1. Completion of all 5 courses, in the strand.
2. Take the College Board exam for the AP course.

Signature Program Certificate in Education



Career & Technology Education
Career Pathway in

Child Development Associate Preschool Program (CDA)

Required Courses

**Child Growth and
Development (Level 1)**
EDU2029A/B



**Learning Environment for
Preschoolers (Level 2)**
EDU2031A/B



**Portfolio and Internship
(Level 3)**
EDU____A/B
new code coming 22-23



**Child Development
Associate Internship**
EDU2028 (both semesters)



AP Psychology
SOC2069A/B



Requirements for Program Completion

1. Completion of all four Child and Adolescent Development courses.
2. Take the College Board exam for AP Psychology.

SOCIAL STUDIES SCHOLAR

Signature Program Certificate in Social Studies

Required Courses



**AP NSL
Government**
SOC2021A/B



**AP
World History**
SOC2047A/B

Two of the following Courses

- **AP United States History**
SOC2022A/B
- **AP Comparative Governments**
SOC2024A/B
- **AP European History**
SOC2037A/B
- **AP Human Geography** 
SOC2068A/B
- **AP Macroeconomics**
SOC2064
- **AP Microeconomic**
SOC2065
- **AP Psychology**
SOC2069A/B

12th Grade



CAPSTONE COURSE:
Quest

ENR2004A/B

Prerequisites:
AP NSL and
AP World History

LAW & SOCIETY



Career & Technology Education
Career Pathway in
JUSTICE, LAW & SOCIETY*

Required Courses

**Introduction to
Justice, Law & Society**
PGS2000A/B



**Law & the
Administration of Justice**
PGS2001A/B



**Contemporary Issues in
Justice, Law, Society**
PGS2002A/B



**Intern
Law/Gov't/Safety/Admin**
PGS2003

One of the Following Courses

- **AP United States History**
- **AP Comparative Governments**
- **AP European History**
- **AP Human Geography**
- **AP Macroeconomics**
- **AP Microeconomic**
- **AP Psychology** 

(see course codes above)

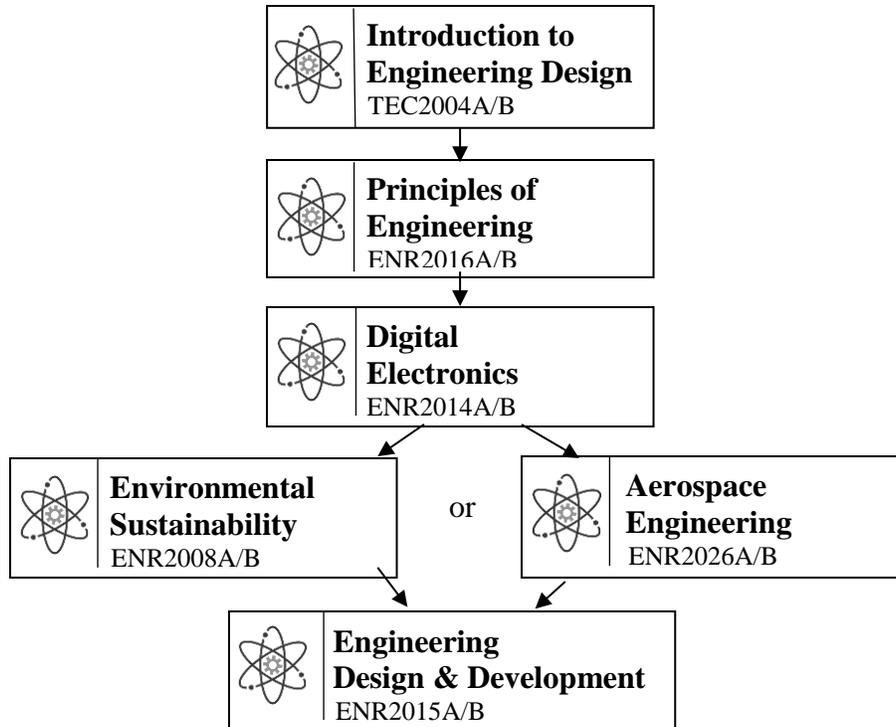
Requirements for Program Completion

1. 4 law classes
2. 1 Social Studies AP classes
3. Take the College Board exams for the AP courses.

Signature Program Certificate in Engineering



Career & Technology Education
Career Pathway in
ADVANCED ENGINEERING PROJECT LEAD THE WAY*



Requirements for Program Completion

1. Completion of 5 courses, in the strand at a high school.
***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 course, except the capstone, Engineering Design & Development course, by earning a 6 or higher on the end of the year PLTW exam.*

English

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, 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: 2-3 readings per week, with annotation and written analysis

Average Numbers of Papers per Semester: 4

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: 20 pages

Average Numbers of Papers per Semester: 2-3 major papers

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

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

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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.

Career Technologies & Project Lead the Way

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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 (1 per unit)

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.

☐ **Advanced Placement Computer Science A (Java)**

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.

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. It provides an overview of engineering and engineering technology. Students will develop problem-solving skills by tackling real-world engineering problems and then they apply what they know to take on challenges like designing machine that serves a purpose by themselves. This course provides a hands-on approach to science, math, and technology.

Average Reading Per Night: 30 minutes

Average Numbers of Projects per Semester: 2-3

Average Number 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

Other Expectations: Through theory and practical hands-on experience, students will become familiar with the multifaceted career of engineering. Students will work on projects such as energy transfer devices, marble sorters, balsa wood bridges, pneumatic labs, electronic labs, projectile launchers, and materials testing activities.

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.

Science

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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: The AP Environmental Science course is designed to engage students with the scientific principles, concepts, and methodologies required to understand the interrelationships within the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. APES is interdisciplinary, embracing topics from geology, biology, environmental science, chemistry, and geography. Topics covered include Ecosystems, Biodiversity, Populations, Earth & Atmospheric Science, Land & Water Use, Pollution, and Global Change.

Prerequisite: Completion of Biology and Chemistry Concurrent (Concurrent chemistry accepted but not recommended)

Average Reading per Night: 5-10 pages or online lecture equivalent (student choice)

Average Number of Projects per Semester: 3-4 major projects, plus unit labs and quizzes

Average Number of Tests per Semester: 4-5 unit tests

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 Physics 1 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

Co-requisite: None

Social Studies

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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 engage in seminars, simulations, discussions, and debates regarding the political framework and civil society in the UK, Russia, China, Mexico, Nigeria and Iran. The course is both a survey of the various forms of government found throughout the world and an in-depth study of the 6 core country's specific governments and approaches to politics. Students begin by examining the core political concepts and sources of power/legitimacy. They analyze the electoral system and opportunities for political participation. Students compare the structure of governmental institutions in different countries and learn how each structure affects society in general and influences the political culture. 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 European History

Course Description: This course is for students who are interested in a freshman college level course in European history. In AP European History, students investigate significant events, individuals, developments, and processes from approximately 1450 to the present. Students develop and use the same skills, practices, and methods employed by historians: analyzing primary and secondary sources; developing historical arguments; making historical connections; and utilizing reasoning about comparison, causation, and continuity and change over time. The course also provides seven themes that students explore throughout the course in order to make connections among historical developments in different times and places: interaction of Europe and the world, economic and commercial development, cultural and intellectual development, states and other institutions of power, social organization and development, national and European identity, and technological and scientific innovations. This course prepares students for the AP European History examination.

Average Reading per Night: 5 pages

Average Numbers of Papers per Semester: 4

Average Number of Tests per Semester: 5

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: Practice questions, or 5 pages of reading, or a 5-10 minute video

Average Numbers of Papers per Semester: Two projects

Average Number of Tests per Semester: 6 unit tests; weekly content 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.

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: Practice questions, or 5 pages of reading, or a 5-10 minute video

Average Numbers of Papers per Semester: Two projects

Average Number of Tests per Semester: 6 unit tests, weekly content 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 content quizzes.

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 All Tasks (90%) and Practice (10%). All Task assessments include end of the unit exams, critical readings, and a semester project. There is a non-written research project in first semester, and students will be conducting and presenting their own experiments in 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 Modern World History (1000 – the Present)

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: 1-2 quizzes on textbook per unit and major writing assignments each semester

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. In AP U.S. History, students investigate significant events, individuals, developments, and processes in nine historical periods from approximately 1491 to the present. Students develop and use the same skills and methods employed by historians: analyzing primary and secondary sources; developing historical arguments; making historical connections; and utilizing reasoning about comparison, causation, and continuity and change. This course prepares students for the AP U.S. History exam.

Average Reading per Night: 2-3 pages

Average Numbers of Papers per Semester: 3

Average Number of Tests per Semester: 5

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