

AKS

ACADEMIC KNOWLEDGE AND SKILLS
GWINNETT COUNTY PUBLIC SCHOOLS

2012–13 COMPLETE AKS

Infinite Possibilities



GWINNETT SCHOOL OF MATHEMATICS, SCIENCE, AND TECHNOLOGY

Gwinnett's curriculum for grades K–12 is called the Academic Knowledge and Skills (AKS) and is aligned to the state-adopted Common Core Georgia Performance Standards (CCGPS) in Language Arts, Mathematics, and literacy skills in Science, Social Studies, and Technical Education for middle school students. Gwinnett's AKS is a rigorous curriculum that prepares students for college and 21st century careers in a globally competitive future. The AKS for each grade level spell out the essential things students are expected to know and be able to do in that grade or subject. The AKS offer a solid base on which teachers build rich learning experiences. Teachers use curriculum guides, textbooks, technology, and other materials to teach the AKS and to make sure every student is learning to his or her potential.

The Academic Knowledge and Skills (AKS) were developed by our teachers, with input from our parents and community, in response to Gwinnett County Public Schools' mission statement:

The mission of Gwinnett County Public Schools is to pursue excellence in academic knowledge, skills, and behavior for each student resulting in measured improvement against local, national, and world-class standards.

In this booklet, you will find a complete list of the AKS, by subject and course, for Gwinnett School of Mathematics, Science, and Technology. We encourage you to talk to your student about what he or she is learning.

WELCOME TO THE 2012–13 SCHOOL YEAR!



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About the Academic Knowledge and Skills (AKS) Curriculum

The AKS are the standards for academic excellence for all students in Gwinnett County Public Schools (GCPS). In every GCPS classroom, instruction and assessment are tailored so that all students learn the AKS. The alignment of AKS with standardized assessments— such as the SAT and ACT college-admissions tests— ensures that GCPS students are well-prepared for these national measurements of achievement. GCPS’ rigorous AKS curriculum also aligns with the state curriculum, known as the Georgia Performance Standards (GPS). This alignment assures that students are prepared for state tests, including the Georgia High School Writing Test and state-required End of Course Test for designated high school courses.

Since its inception in 1996, GCPS’ AKS curriculum has reflected the collective wisdom of thousands of educators and community members who worked together to determine what students need to know and be able to do in order to be successful at the next grade level and in the future. This investment by GCPS’ stakeholders has ensured that the AKS curriculum remains a rigorous and relevant blueprint for student learning in Gwinnett. As part of that ongoing effort, the GEMS Oversight Committee— made up of community and GCPS staff members— meets annually to review proposed additions, deletions, and changes to the AKS that come out of school and community surveys. Following validation by the GEMS committee, recommendations are submitted to the superintendent for approval by the School Board, with implementation the following school year.

High School Graduation Requirements

All students seeking a regular education diploma in Gwinnett must earn the required course credits set out in state graduation requirements. In addition, students must pass the Georgia High School Graduation Writing Test (GHSWT) and Gwinnett’s High School Gateway Writing Assessment. Students also must demonstrate proficiency in the four core areas— language arts, mathematics, science, and social studies— by either passing one End of Course Test (EOCT) in each of the core content areas or by passing the corresponding subtest of the Georgia High School Graduation Tests (GHS GT). This option is available to students entering high school between July 2008 and June 2011 (for the most part, the graduating classes of 2012, 2013, and 2014). Students starting high school in 2011-12 or after must pass all courses with a required EOCT in order to earn a Georgia diploma.

Graduation requirements are specific to each entering freshman class. You can learn more about state requirements in The Choice Book for your student’s class (available on the school system website... www.gwinnett.k12.ga.us) or on the state Department of Education website (<http://public.doe.k12.ga.us/>). In addition, families will receive a flyer regarding graduation requirements during the fall.

Required Testing for High School

Georgia High School Writing Test

All students seeking a Georgia high school diploma must pass the Georgia High School Writing Test (GHSWT). Students take the graduation writing test in the fall of their junior year. Students produce a composition of no more than two pages on an assigned topic. The two-hour test administration includes 100 minutes of writing and time for planning and editing the paper. This assessment ensures that students who qualify for a Georgia diploma have mastered essential core academic content and skills.

Students who do not pass on their first attempt have multiple opportunities to receive extra help, retake the writing test if they didn’t pass, and qualify for graduation before the spring of the 12th grade. Students must pass the writing test to graduate.

GCPS High School Gateway Assessment

All students must demonstrate knowledge of Gwinnett County Public Schools’ Academic Knowledge and Skills (AKS) curriculum. Students can find the AKS by course on the school system website (at www.gwinnett.k12.ga.us/aks.nsf). Students must pass the school system’s High School Gateway Assessment as a Gwinnett requirement for earning a diploma.

The Gateway Assessment measures students’ ability to write effectively about 9th and 10th grade Science and 10th grade Social Studies AKS. Students write two essays— one on a Science topic and one on a Social Studies topic. In writing a response, students must use their own knowledge about the topic and utilize information from documents provided. Students have 125 minutes to write each of the essays, one per day.

The assessment is administered in the spring of the 10th grade year. Intervention classes are provided to help students who do not pass this assessment. Students who are not successful on the test the first time have several opportunities to retake the assessment before graduation. Students must pass both sections of the Gateway to graduate.

End of Course Tests

Students are required to participate in state-mandated End of Course Tests (EOCT) to earn credit for eight designated high school courses. EOCTs— required for two courses in each core subject area— are designed to hold students statewide to the same learning standards. Any student enrolled in and/or receiving credit for a course requiring an EOCT would participate in the assessment at the completion of the course. Results of this multiple-choice test count for 20% of the student’s semester grade in the semester the test is administered. While students are not required to pass the EOCT to pass the course, the EOCT does count 20% of the semester grade so a failing score on an EOCT would have a significant impact on a student’s final grade.

The EOCT program includes the following eight content-area assessments: Integrated Algebra I/Accelerated Integrated Algebra I, Integrated Geometry/Accelerated Integrated Geometry, U.S. History, Economics/Business/Free Enterprise, Biology, Physical Science, Freshman Language Arts, and Junior American Literature. Students must take the End of Course Test in order to receive credit for the courses requiring the EOCT. Students starting high school in 2011-12 or after must pass all courses with a required EOCT in order to earn a Georgia diploma.

Online Resources... Preparing for Required High School Testing

www.usatestprep.com/front/login.php

(Your student can request a user name and password from the school.)

www.GAcollge411.org (Go to the Test Prep resources under the College Planning tab.)

Notes about this Booklet

- Correlations to the following state-required objectives/assessments/curriculum are indicated for respective Academic Knowledge and Skills: *Georgia Performance Standards (GPS)* and *Character Education (CE)*
- Academic Knowledge and Skills beginning with “explore” will not be assessed for mastery at that grade level, but are prerequisite for mastery at a higher grade level.
- Comprehensive AKS booklets like this one are available by grade level (K–8 and combined grades for high school) and by core academic subject (Language Arts, Mathematics, Science, and Social Studies) on the district website at www.gwinnett.k12.ga.us. These booklets are posted in PDF form.
- Parents also can find an online PDF of The Choice Book, which provides an overview of the high school experience, high school and postsecondary planning tools, and a “course catalog.” Rising 9th graders receive a printed copy of The Choice Book. The Choice Book is specific to each entering freshman class. Families may access the appropriate copy of The Choice Book for their student’s class on the school system website. (Click on the “Publications for Students” link on the Parents or Students tabs.)
- The AKS numbering system was developed to allow for additions and deletions of AKS without changing the number reference of other AKS. The reference code includes the subject and/or grade level, a letter representing the topic strand, and the year implemented.

Character Education

The school system supports a mandate from the Georgia General Assembly requiring all schools to teach character education. Society and culture are tied together through common threads that guide the way we live, work, and learn. These common beliefs are taught at home and reinforced by the community, schools, religious institutions, and youth service groups. These basic tenets guide the way Gwinnett County teachers teach and the way the school system conducts the business of teaching and learning. Character education is thoroughly embedded in the AKS curriculum. Traits emphasized in the curriculum include the following:

courage	respect for	self-control	generosity	respect for	creativity
patriotism	others	courtesy	punctuality	environment	sportsmanship
citizenship	cooperation	compassion	cleanliness	respect for	loyalty
honesty	kindness	tolerance	cheerfulness	creator	perseverance
fairness	self-respect	diligence	school pride	patience	virtue

Parent Involvement



Research shows that when parents are involved in their student's education at home, their student does better in school. When parents are involved at school, their student's achievement improves and the schools they attend become even stronger.

Be There is a national movement that inspires parents to become more involved in their student's education and their public schools. Teachable moments are everywhere. You can be your student's favorite teacher by connecting in meaningful ways as you go through the ordinary routines of the day... driving in the car, preparing a meal, shopping, or doing chores. Below, you will find tips for helping your student have a successful high school experience. Look for more helpful tipsheets and other resources on the school system website and your local school website.

Suggestions for Helping Your Student Achieve Academically

The school system encourages parents to be an active part of their student's education. Following are a few ways you can be involved:

- Review the AKS for your student's classes each year. You also can access the AKS on the system's website (www.gwinnett.k12.ga.us).
- Be familiar with important information about required assessments and graduation requirements. You can find this information in your student's copy of The Choice Book or on the school system website. (The Choice Book is specific to each entering freshman class.)
- Ask to see your student's work and talk about what he or she is learning in school.
- Encourage your student to take the most challenging classes in which he or she can be successful. Students who challenge themselves in high school are better prepared for college classes and other postsecondary studies.
- Support your student and communicate that his or her academic success is important to you.
- Remind your student to edit work when writing and to pay careful attention to appropriate grammar and spelling.
- Communicate with your student's teachers.
- Attend curriculum nights, PTA meetings, and other school meetings.
- Share these Keys to School Success with your student:
 - **Be prepared** each day. Have the needed materials and assignments for each class.
 - **Stay organized.** Keep your desk, notebooks, book bag, and home study area neatly arranged.
 - **Use an agenda book or calendar** to keep track of assignments and due dates. Check it every day.
 - **Give your best effort** to both homework and in-class assignments. Complete assignments and turn them in on time.
 - **Review your work** from each class every evening, even if you don't have a homework assignment due the next day.
 - **Study** for every test and quiz.
 - **Ask your teacher questions** if you do not understand a lesson or an assignment.
 - **Get involved** in at least one extracurricular activity.

Mathematics - Advanced Algebra II with Trigonometry and Data Analysis

A - Process Skills

- use appropriate technology to solve mathematical problems (GPS) (GSAA_A2008-1)
- build new mathematical knowledge through problem-solving (GPS) (GSAA_A2008-2)
- solve problems that arise in mathematics and in other areas (GPS) (GSAA_A2008-3)
- apply and adapt a variety of appropriate strategies to solve problems (GPS) (GSAA_A2008-4)
- monitor and reflect on the process of mathematical problem-solving (GPS) (GSAA_A2008-5)
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics (GPS) (GSAA_A2008-6)
- make and investigate mathematical conjectures (GPS) (GSAA_A2008-7)
- investigate, develop, and evaluate mathematical arguments and proofs (GPS) (GSAA_A2008-8)
- select and use various types of reasoning and methods of proof (GPS) (GSAA_A2008-9)
- organize and consolidate mathematical thinking (GPS) (GSAA_A2008-10)
- communicate mathematical thinking coherently to peers, teachers, and others (GPS) (GSAA_A2008-11)
- analyze and evaluate the mathematical thinking and strategies of others (GPS) (GSAA_A2008-12)
- use the terminology and language of mathematics to express mathematical ideas precisely (GPS) (GSAA_A2008-13)
- recognize and use connections among mathematical ideas (GPS) (GSAA_A2008-14)
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole (GPS) (GSAA_A2008-15)
- recognize and apply mathematics in contexts outside of mathematics (GPS) (GSAA_A2008-16)
- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas (GPS) (GSAA_A2008-17)
- select, apply, and translate among mathematical representations to solve problems (GPS) (GSAA_A2008-18)
- use representations to model and interpret physical, social, and mathematical phenomena (GPS) (GSAA_A2008-19)

B - Numbers and Operations

- write square roots of negative numbers in imaginary form (GPS) (GSAA_B2008-20)
- write complex numbers in the form $a + bi$ (GPS) (GSAA_B2008-21)
- add, subtract, multiply, and divide complex numbers (GPS) (GSAA_B2008-22)
- simplify expressions involving complex numbers (GPS) (GSAA_B2008-23)
- extend properties of exponents to include rational exponents (GPS) (GSAA_B2008-24)

C - Algebra

- represent functions using function notation (GPS) (GSAA_C2008-25)
- explore functions, solve equations, and operate with radical, polynomial, and rational expressions (GPS) (GSAA_C2008-26)
- graph the basic functions $f(x)=x^n$, where $n=1$ to 3 , $f(x)=\sqrt{x}$, $f(x)=|x|$, and $f(x)=1/x$ (GPS) (GSAA_C2008-27)
- compare and contrast linear, quadratic, exponential, logarithmic, and power functions (GPS) (GSAA_C2008-28)
- graph transformations of basic functions including vertical shifts, stretches and shrinks, as well as reflections across the x- and y-axes (GPS) (GSAA_C2008-29)
- investigate and explain the characteristics of different types of functions including polynomial functions such as quadratics: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, rates of change, and end behavior (GPS) (GSAA_C2008-30)
- solve polynomial equations using the following theorems: remainder, factor, rational root, and fundamental theorem of algebra (GPS) (GSAA_C2008-31)
- apply Pascal's Triangle and its properties to binomial expansions and experiments (GPS) (GSAA_C2008-32)
- use the Binomial Theorem to expand and simplify expressions (GPS) (GSAA_C2008-33)
- describe the effects of the following on the graph of a polynomial function: degree, lead coefficient, and multiplicity of real zeros (GPS) (GSAA_C2008-34)

C – Algebra (continued)

- analyze the characteristics of a function in a given context, and use graphs and tables to investigate its behavior (GPS) (GSAA_C2008-35)
- determine graphically and algebraically whether a function has symmetry and whether it is even, odd, or neither (GPS) (GSAA_C2008-36)
- determine whether a polynomial function has symmetry and whether it is even, odd, or neither (GPS) (GSAA_C2008-37)
- analyze any equation in x that can be interpreted as the equation $f(x)=g(x)$, and then interpret the solutions of the equation as the x -value(s) of the intersection point(s) of the graphs of $y = f(x)$ and $y = g(x)$ (GPS) (GSAA_C2008-38)
- add, subtract, multiply, and divide polynomials (GPS) (GSAA_C2008-39)
- add, subtract, multiply, and divide rational expressions (GPS) (GSAA_C2008-40)
- factor expressions by greatest common factor, grouping, trial and error, and special products limited to the following formulas: $(x + y)^2 = x^2 + 2xy + y^2$; $(x - y)^2 = x^2 - 2xy + y^2$; $(x + y)(x - y) = x^2 - y^2$; $(x + a)(x + b) = x^2 + (a + b)x + ab$; $(x + y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$; $(x - y)^3 = x^3 - 3x^2y + 3xy^2 - y^3$ (GPS) (GSAA_C2008-41)
- solve simple rational equations that result in linear equations or quadratic equations with leading coefficient of 1 (GPS) (GSAA_C2008-42)
- analyze quadratic functions in the forms $f(x) = ax^2 + bx + c$ and $f(x) = a(x-h)^2 + k$ (GPS) (GSAA_C2008-43)
- find real and complex solutions of quadratic equations by factoring, taking square roots, and applying the quadratic formula (GPS) (GSAA_C2008-44)
- analyze the nature of roots using technology and the discriminant (GPS) (GSAA_C2008-45)
- solve quadratic equations in one variable algebraically and graphically (GPS) (GSAA_C2008-46)
- solve quadratic inequalities both graphically and algebraically and describe the solutions using linear inequalities (GPS) (GSAA_C2008-47)
- use area and volume models for polynomial arithmetic (GPS) (GSAA_C2008-48)
- explore rates of change, comparing constant rates of change (e.g., slope) versus variable rates of change and compare rates of change of linear, quadratic, square root, and other function families (GPS) (GSAA_C2008-49)
- simplify algebraic and numeric expressions involving square root (GPS) (GSAA_C2008-50)
- solve equations involving radicals such as $\sqrt{x + b} = c$ (GPS) (GSAA_C2008-51)
- investigate step and piecewise functions, including greatest integer and absolute value functions (GPS) (GSAA_C2008-52)
- write absolute value functions as piecewise functions (GPS) (GSAA_C2008-53)
- investigate and explain characteristics of a variety of piecewise functions including domain, range, vertex, axis of symmetry, zeros, intercepts, extrema, points of discontinuity, intervals over which the function is constant, intervals of increase and decrease, and rates of change (GPS) (GSAA_C2008-54)
- solve absolute value equations and inequalities analytically, graphically, and by using appropriate technology (GPS) (GSAA_C2008-55)

D - Data Analysis and Probability

- apply the addition and multiplication principles of counting (GPS) (GSAA_D2008-56)
- calculate and use simple permutations and combinations (GPS) (GSAA_D2008-57)
- find the probabilities of mutually exclusive events (GPS) (GSAA_D2008-58)
- find the probabilities of dependent and independent events (GPS) (GSAA_D2008-59)
- calculate conditional probabilities (GPS) (GSAA_D2008-60)
- use expected value to predict outcomes (GPS) (GSAA_D2008-61)
- compare summary statistics (mean, median, quartiles, and interquartile range) from one sample data distribution to another sample data distribution in describing center and variability of the data distributions (GPS) (GSAA_D2008-62)
- compare the averages of the summary statistics from a large number of samples to the corresponding population parameters (GPS) (GSAA_D2008-63)
- explain how a random sample is used to improve the chance of selecting a representative sample (GPS) (GSAA_D2008-64)
- explore variability of data by determining the mean absolute deviation (the average of the absolute values of the deviations) (GPS) (GSAA_D2008-65)

D – Data Analysis and Probability (continued)

- determine an algebraic model to quantify the association between two quantitative variables (GPS) (GSAA_D2008-66)
- gather and plot data that can be modeled with linear and quadratic functions (GPS) (GSAA_D2008-67)
- examine the issues of curve-fitting by finding good linear fits to data using simple methods such as the median-median line and "eyeballing" (GPS) (GSAA_D2008-68)
- apply the processes of linear and quadratic regression for curve-fitting using appropriate technology (GPS) (GSAA_D2008-69)
- determine the effect that large changes in data have on lines of best fit (e.g., regression, median-median) (GPS) (GSAA_D2008-70)
- model exponential, logarithmic, and sinusoidal situations (GPS) (GSAA_D2008-71)

E - Trigonometry

- graph and model circular functions (GPS) (GSAA_E2008-72)
- convert measures of angles between radians and degrees (GPS) (GSAA_E2008-73)
- develop, graph, and apply the six trigonometric functions (GPS) (GSAA_E2008-74)
- apply the six trigonometric functions as functions of general angles in standard position (GPS) (GSAA_E2008-75)
- determine characteristics of the graphs of the six basic trigonometric functions (GPS) (GSAA_E2008-76)
- use the coordinates of a point on the terminal side of an angle to express x as $r \cos \theta$ and y as $r \sin \theta$ (GPS) (GSAA_E2008-77)
- verify and apply the trigonometric formula to find the area of a triangle (GPS) (GSAA_E2008-78)
- find values of trigonometric functions using points on the terminal sides of angles in the standard position (GPS) (GSAA_E2008-79)
- apply the six trigonometric functions as functions of arc length on the unit circle (GPS) (GSAA_E2008-80)
- find values of trigonometric functions using the unit circle (GPS) (GSAA_E2008-81)
- apply the six basic trigonometric functions as functions of real numbers (GPS) (GSAA_E2008-82)
- graph transformations of trigonometric functions including changing period, amplitude, phase shift, and vertical shift (GPS) (GSAA_E2008-83)
- apply laws of sines and cosines and determine area of any triangle (GPS) (GSAA_E2008-84)
- perform vector operations algebraically and geometrically (GPS) (GSAA_E2008-85)
- graph and perform two- and three-dimensional vector problems (GPS) (GSAA_E2008-86)

F - Reading Across the Curriculum

- read mathematical materials to establish context for subject matter, develop vocabulary, and to be aware of current research (GPS) (GSAA_F2008-87)

Mathematics - Advanced Geometry with Discrete Topics

A - Process Skills

- use appropriate technology to solve mathematical problems (GPS) (GSAG_A2008-1)
- build new mathematical knowledge through problem-solving (GPS) (GSAG_A2008-2)
- solve problems that arise in mathematics and in other areas (GPS) (GSAG_A2008-3)
- apply and adapt a variety of appropriate strategies to solve problems (GPS) (GSAG_A2008-4)
- monitor and reflect on the process of mathematical problem-solving (GPS) (GSAG_A2008-5)
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics (GPS) (GSAG_A2008-6)
- make and investigate mathematical conjectures (GPS) (GSAG_A2008-7)
- investigate, develop, and evaluate mathematical arguments and proofs (GPS) (GSAG_A2008-8)
- select and use various types of reasoning and methods of proof (GPS) (GSAG_A2008-9)
- organize and consolidate mathematical thinking (GPS) (GSAG_A2008-10)
- communicate mathematical thinking coherently to peers, teachers, and others (GPS) (GSAG_A2008-11)
- analyze and evaluate the mathematical thinking and strategies of others (GPS) (GSAG_A2008-12)
- use the terminology and language of mathematics to express mathematical ideas precisely (GPS) (GSAG_A2008-13)

Mathematics

A - Process Skills (*continued*)

- recognize and use connections among mathematical ideas (GPS) (GSAG_A2008-14)
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole (GPS) (GSAG_A2008-15)
- recognize and apply mathematics in contexts outside of mathematics (GPS) (GSAG_A2008-16)
- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas (GPS) (GSAG_A2008-17)
- select, apply, and translate among mathematical representations to solve problems (GPS) (GSAG_A2008-18)
- use representations to model and interpret physical, social, and mathematical phenomena (GPS) (GSAG_A2008-19)

B - Coordinate Geometry

- determine the distance between two points in 2-space and 3-space (GPS) (GSAG_B2008-20)
- use the coordinate plane to investigate properties of and verify conjectures related to triangles, quadrilaterals, and other geometric figures (GPS) (GSAG_B2008-21)
- determine the midpoint of a segment (GPS) (GSAG_B2008-22)
- determine the distance between a point and a line (GPS) (GSAG_B2008-23)
- plot the point (x, y, z) and understand it as a vertex of a rectangular prism (GPS) (GSAG_B2008-24)
- analyze effects of reflections, rotations, translations, dilations, and symmetry of geometric figures in the coordinate plane (GPS) (GSAG_B2008-25)
- investigate and apply transformation vectors and scale changes to find the image of figures on the coordinate plane (GPS) (GSAG_B2008-26)
- create composites of transformations (GPS) (GSAG_B2008-27)
- determine the image, pre-image, or inverse of a given mapping, and the composite of two mappings using matrices (GPS) (GSAG_B2008-28)
- apply properties of vectors to solve problems (GPS) (GSAG_B2008-29)
- represent addition of vectors and multiplication of a vector by a scalar both symbolically and pictorially (GPS) (GSAG_B2008-30)

C - Classic Geometry - Area, Volume, Similarity, Locus, Cross Section

- compare areas of similar polygons to solve problems and justify the reasonableness of results (GPS) (GSAG_C2008-31)
- optimize perimeter, area, and volume of geometric figures and solids (GPS) (GSAG_C2008-32)
- find the exact or approximate volume and surface area of solids composed of prisms, pyramids, cylinders, cones, and/or spheres (GPS) (GSAG_C2008-33)
- compare the volume of similar solids to solve problems and justify the reasonableness of results (GPS) (GSAG_C2008-34)
- apply indirect measurement and similarity theorems to solve problems (GPS) (GSAG_C2008-35)
- apply and prove congruence and similarity properties of solids (GPS) (GSAG_C2008-36)
- use and apply surface area and volume of a sphere (GPS) (GSAG_C2008-37)
- determine the effect on surface area and volume of changing the radius or diameter of a sphere (GPS) (GSAG_C2008-38)
- use data to analyze properties of geometric solids and figures (GPS) (GSAG_C2008-39)
- analyze and interpret three-dimensional geometric figures using such topics as projections, cross-sections, and locus problems (GPS) (GSAG_C2008-40)
- analyze, interpret, and measure dihedral and solid angles (GPS) (GSAG_C2008-41)

D - Classic Geometry - Logic & Discrete

- use conjecture, inductive reasoning, deductive reasoning, counterexamples, and indirect proof as appropriate (GPS) (GSAG_D2008-42)
- apply and use the relationships among a statement and its converse, inverse, and contrapositive (GPS) (GSAG_D2008-43)
- determine the equivalence and validity of truth tables including sentences involving conditional statements, conjunctions, disjunctions, and negations (GPS) (GSAG_D2008-44)
- determine truth tables for sentences and use Venn Diagrams to illustrate the relationship represented by truth tables (GPS) (GSAG_D2008-45)

Mathematics

E - Classic Geometry - Plane Geometry - Triangles & Quadrilaterals

- find and use points of concurrency in triangles: incenter, orthocenter, circumcenter, and centroid (GPS) (GSAG_E2008-46)
- determine the sum of interior and exterior angles in a polygon (GPS) (GSAG_E2008-47)
- use congruence postulates and theorems for triangles (GPS) (GSAG_E2008-48)
- discover, prove, and apply properties of triangles, quadrilaterals, and other polygons (GPS) (GSAG_E2008-49)
- use and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid, and kite (GPS) (GSAG_E2008-50)
- use and explain triangle inequality, side-angle inequality, and exterior-angle inequality (GPS) (GSAG_E2008-51)

F - Classic Geometry - Trigonometry Foundations

- define and apply sine, cosine, and tangent ratios to right triangles (GPS) (GSAG_F2008-52)
- determine the lengths of sides of 30° - 60° - 90° triangles (GPS) (GSAG_F2008-53)
- determine the lengths of sides of 45° - 45° - 90° triangles (GPS) (GSAG_F2008-54)
- use and apply the relationship of the trigonometric ratios for similar and special right triangles (GPS) (GSAG_F2008-55)

G - Classic Geometry - Circles

- apply properties of chords, tangents, and secants as an application of triangle similarity (GPS) (GSAG_G2008-56)
- apply properties of central, inscribed, and related angles (GPS) (GSAG_G2008-57)
- use the properties of circles to solve problems involving the length of an arc and the area of a sector (GPS) (GSAG_G2008-58)
- justify measurements and relationships in circles using geometric and algebraic properties (GPS) (GSAG_G2008-59)

H - Non Euclidean Geometry

- investigate spherical and hyperbolic geometry (GPS) (GSAG_H2008-60)

I - Discrete Topics

- discover the basic properties of fractals, including self-similarity and iteration (GPS) (GSAG_I2008-61)
- build fractal designs by using iterative steps (GPS) (GSAG_I2008-62)
- investigate applications of the Fibonacci sequence (GPS) (GSAG_I2008-63)
- investigate the relationship known as the Golden Ratio (GPS) (GSAG_I2008-64)
- solve problems using the Golden Ratio (GPS) (GSAG_I2008-65)

J - Reading Across the Curriculum

- read mathematical materials to establish context for subject matter, develop vocabulary, and to be aware of current research (GPS) (GSAG_J2008-66)

Mathematics - Advanced Pre-Calculus with Discrete Mathematics and Data Analysis

A - Process Skills

- use appropriate technology to solve mathematical problems (GPS) (GSAP_A2008-1)
- build new mathematical knowledge through problem-solving (GPS) (GSAP_A2008-2)
- solve problems that arise in mathematics and in other areas (GPS) (GSAP_A2008-3)
- apply and adapt a variety of appropriate strategies to solve problems (GPS) (GSAP_A2008-4)
- monitor and reflect on the process of mathematical problem-solving (GPS) (GSAP_A2008-5)
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics (GPS) (GSAP_A2008-6)
- make and investigate mathematical conjectures (GPS) (GSAP_A2008-7)
- investigate, develop, and evaluate mathematical arguments and proofs (GPS) (GSAP_A2008-8)
- select and use various types of reasoning and methods of proof (GPS) (GSAP_A2008-9)
- organize and consolidate mathematical thinking (GPS) (GSAP_A2008-10)

Mathematics

A – Process Skills (*continued*)

- communicate mathematical thinking coherently to peers, teachers, and others (GPS) (GSAP_A2008-11)
- analyze and evaluate the mathematical thinking and strategies of others (GPS) (GSAP_A2008-12)
- use the terminology and language of mathematics to express mathematical ideas precisely (GPS) (GSAP_A2008-13)
- recognize and use connections among mathematical ideas (GPS) (GSAP_A2008-14)
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole (GPS) (GSAP_A2008-15)
- recognize and apply mathematics in contexts outside of mathematics (GPS) (GSAP_A2008-16)
- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas (GPS) (GSAP_A2008-17)
- select, apply, and translate among mathematical representations to solve problems (GPS) (GSAP_A2008-18)
- use representations to model and interpret physical, social, and mathematical phenomena (GPS) (GSAP_A2008-19)

B - Algebra

- investigate and explain characteristics of rational functions, including domain, range, zeros, points of discontinuity, intervals of increase and decrease, rates of change, local and absolute extrema, symmetry, asymptotes, and end behavior (GPS) (GSAP_B2008-20)
- find inverses of rational functions discussing domain, range, symmetry, and function composition (GPS) (GSAP_B2008-21)
- solve rational equations and inequalities analytically, graphically, and by using appropriate technology (GPS) (GSAP_B2008-22)
- apply graphs of trigonometric functions in realistic contexts involving periodic phenomena (GPS) (GSAP_B2008-23)
- compare and contrast properties of functions within and across the following types: linear, quadratic, polynomial, power, rational, exponential, logarithmic, trigonometric, and piecewise (GPS) (GSAP_B2008-24)
- investigate transformations of functions (GPS) (GSAP_B2008-25)
- investigate characteristics of functions built through sum, difference, product, quotient, and composition (GPS) (GSAP_B2008-26)
- apply the definitions and properties of logarithms (GSAP_B2008-27)
- recognize the inverse relationship of logarithms and exponential functions and graph each function (GSAP_B2008-28)
- define logarithmic functions as inverses of exponential functions (GPS) (GSAP_B2008-29)
- apply properties of logarithms by extending laws of exponents (GPS) (GSAP_B2008-30)
- determine values of common and natural logarithms and antilogarithms and apply the change of base rule (GSAP_B2008-31)
- solve exponential and logarithmic equations (GPS) (GSAP_B2008-32)
- investigate and explain characteristics of exponential and logarithmic functions including domain and range, asymptotes, zeros, intercepts, intervals of increase and decrease, and rate of change (GPS) (GSAP_B2008-33)
- graph functions as transformations of $f(x) = ax$, $f(x) = \log ax$, $f(x) = ex$, $f(x) = \ln x$ (GPS) (GSAP_B2008-34)
- explore real phenomena related to exponential and logarithmic functions including half-life and doubling time (GPS) (GSAP_B2008-35)
- find real and complex roots of higher degree polynomial equations using the factor theorem, remainder theorem, rational root theorem, and fundamental theorem of algebra, incorporating complex and radical conjugates (GPS) (GSAP_B2008-36)
- solve polynomial, exponential, and logarithmic equations analytically, graphically, and using appropriate technology (GPS) (GSAP_B2008-37)
- solve polynomial, exponential, and logarithmic inequalities analytically, graphically, and using appropriate technology and represent solution sets of inequalities using interval notation (GPS) (GSAP_B2008-38)
- extend properties of exponents to include all integer exponents (GPS) (GSAP_B2008-39)
- explain the relationship between the trigonometric ratios of complementary angles (GPS) (GSAP_B2008-40)
- solve application problems using the trigonometric ratios (GPS) (GSAP_B2008-41)
- establish and utilize trigonometric identities to simplify expressions and verify equivalence statements (GPS) (GSAP_B2008-42)
- solve trigonometric equations both graphically and algebraically over a variety of domains using technology as appropriate (GPS) (GSAP_B2008-43)
- find values of the inverse sine, inverse cosine, and inverse tangent functions using technology as appropriate (GPS) (GSAP_B2008-44)

Mathematics

B – Algebra (*continued*)

- determine characteristics of the inverse sine, inverse cosine, and inverse tangent functions and their graphs (GPS) (GSAP_B2008-45)
- represent complex numbers in rectangular and trigonometric form (GPS) (GSAP_B2008-46)
- find products, quotients, powers, and roots of complex numbers in rectangular and trigonometric form (GPS) (GSAP_B2008-47)
- describe parametric representations of plane curves (GPS) (GSAP_B2008-48)
- convert between Cartesian and parametric form (GPS) (GSAP_B2008-49)
- graph equations in parametric form showing direction and endpoints where appropriate (GPS) (GSAP_B2008-50)
- express coordinates of points in rectangular and polar form (GPS) (GSAP_B2008-51)
- identify and graph characteristics of simple polar equations including lines, circles, cardioids, limaçons, and roses (GPS) (GSAP_B2008-52)
- graph and determine points of intersection of polar curves (GSAP_B2008-53)
- use logic to solve applications of programming, electrical engineering, and circuit theory (GSAP_B2008-54)
- use limits to define end behavior of graphs that contain asymptotes (GSAP_B2008-55)

C - Geometry

- represent vectors algebraically and geometrically (GPS) (GSAP_C2008-56)
- convert between vectors expressed using rectangular coordinates and vectors expressed using magnitude and direction (GPS) (GSAP_C2008-57)
- add and subtract vectors and compute scalar multiples of vectors (GPS) (GSAP_C2008-58)
- use vectors to solve realistic problems (GPS) (GSAP_C2008-59)
- solve 3-dimensional geometric problems including spherical (ro, theta, phi), dihedral angle, and solid angle (GSAP_C2008-60)

D - Data Analysis and Probability

- organize, represent, investigate, interpret, and make inferences from data, using the central limit theorem and the standard normal distribution (GPS) (GSAP_D2008-61)
- apply the central limit theorem to calculate confidence intervals for a population mean using data from large samples (GPS) (GSAP_D2008-62)
- use sample data and confidence intervals to draw conclusions about populations (GPS) (GSAP_D2008-63)
- use simulation to develop the idea of the central limit theorem (GPS) (GSAP_D2008-64)
- use student-generated data from random samples of 30 or more members to determine the margin of error and confidence interval for a specified level of confidence (GPS) (GSAP_D2008-65)
- use confidence intervals and margins of error to make inferences from data about a population (GPS) (GSAP_D2008-66)
- use linear and non-linear curves of best fit to describe data sets based on domain and coefficient of determination (r^2) (GSAP_D2008-67)
- use sample data to make informal inferences about population means and standard deviations (GPS) (GSAP_D2008-68)
- pose questions and collect sample data from at least two different populations (GPS) (GSAP_D2008-69)
- calculate and use the means and standard deviations of sets of data (GPS) (GSAP_D2008-70)
- use means and standard deviations to compare data sets (GPS) (GSAP_D2008-71)
- compare the means and standard deviations of random samples with the corresponding population parameters (GPS) (GSAP_D2008-72)
- recognize that the different sample means vary from one sample to the next and recognize that the distribution of the sample means has less variability than the population distribution (GPS) (GSAP_D2008-73)
- create probability histograms of discrete random variables, using both experimental and theoretical probabilities (GPS) (GSAP_D2008-74)
- solve problems involving probabilities by interpreting a normal distribution as a probability histogram for a continuous random variable (z -scores are used for a general normal distribution) (GPS) (GSAP_D2008-75)
- determine intervals about the mean that include a given percent of data (GPS) (GSAP_D2008-76)
- determine the probability that a given value falls within a specified interval (GPS) (GSAP_D2008-77)

Mathematics

D – Data Analysis and Probability (*continued*)

- estimate how many items in a population fall within a specified interval (GPS) (GSAP_D2008-78)
- recognize the differences between experimental and observational studies by posing questions and collecting, analyzing, and interpreting data (GPS) (GSAP_D2008-79)

E - Reading Across the Curriculum

- read mathematical materials to establish context for subject matter, develop vocabulary, and to be aware of current research (GPS) (GSAP_E2008-80)

Mathematics - Advanced Calculus II

A - Process Skills

- use appropriate technology to solve mathematical problems (GSAC_A2010-1)
- build new mathematical knowledge through problem-solving (GSAC_A2010-2)
- solve problems that arise in mathematics and in other areas (GSAC_A2010-3)
- apply and adapt a variety of appropriate strategies to solve problems (GSAC_A2010-4)
- monitor and reflect on the process of mathematical problem-solving (GSAC_A2010-5)
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics (GSAC_A2010-6)
- make and investigate mathematical conjectures (GSAC_A2010-7)
- investigate, develop, and evaluate mathematical arguments and proofs (GSAC_A2010-8)
- select and use various types of reasoning and methods of proof (GSAC_A2010-9)
- organize and consolidate mathematics thinking (GSAC_A2010-10)
- communicate mathematical thinking coherently to peers, teachers, and others (GSAC_A2010-11)
- analyze and evaluate the mathematical thinking and strategies of others (GSAC_A2010-12)
- use the terminology and language of mathematics to express mathematical ideas precisely (GSAC_A2010-13)
- recognize and use connections among mathematical ideas (GSAC_A2010-14)
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole (GSAC_A2010-15)
- recognize and apply mathematics in context outside of mathematics (GSAC_A2010-16)
- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas (GSAC_A2010-17)
- select, apply, and translate among mathematical representations to solve problems (GSAC_A2010-18)
- use representations to model and interpret physical, social, and mathematical phenomena (GSAC_A2010-19)

B - Integrals

- evaluate integrals using integration by parts (GSAC_B2010-20)
- evaluate integrals of rational functions using partial fractions (GSAC_B2010-21)
- evaluate improper integrals (GSAC_B2010-22)

C - Functions

- apply concepts of functions including domain, range, intercepts, and symmetry (GSAC_C2010-23)

D - Geometry

- define parabolas, ellipses, and hyperbolas geometrically (GSAC_D2010-24)
- explain the role of conic sections in the reflection of light and sound (GSAC_D2010-25)
- sketch curves in polar coordinates (GSAC_D2010-26)
- calculate the area of a region with boundary given in polar coordinates (GSAC_D2010-27)
- express curves in parametric form (GSAC_D2010-28)
- find equations of tangents to curves given parametrically (GSAC_D2010-29)

D - Geometry (*continued*)

- calculate arc length using integrals (GSAC_D2010-30)
- calculate the area of a surface generated by revolution (GSAC_D2010-31)
- use Pappus's Theorem on Surface Area to find area of a surface (GSAC_D2010-32)

E - Sequences

- find least upper bounds and greatest lower bounds (GSAC_E2010-33)
- determine the limit of a sequence (GSAC_E2010-34)
- state the convergence or divergence of a sequence (GSAC_E2010-35)
- calculate the limit of a sequence using L'Hospital's Rule (GSAC_E2010-36)
- calculate limits of sequences with indeterminate forms (GSAC_E2010-37)
- determine the convergence of improper integrals (GSAC_E2010-38)
- write a given sequence in sigma notation (GSAC_E2010-39)

F - Series

- evaluate the sum of series (GSAC_F2010-40)
- determine if a series converges or diverges using the integral test, basic comparison test, limit comparison test, root test, and the ratio test (GSAC_F2010-41)
- test for absolute and conditional converges of alternating series (GSAC_F2010-42)
- test for convergence of MacLaurin series (GSAC_F2010-43)
- find a Taylor polynomial for given functions and use them to estimate function values (GSAC_F2010-44)
- find the Lagrange form of the remainder of a series and use it to test for accuracy of the polynomial (GSAC_F2010-45)
- apply Taylor's Theorem to find the Taylor polynomial of a given function for a given value (GSAC_F2010-46)
- find the interval of convergence for a power series (GSAC_F2010-47)
- differentiate and integrate power series (GSAC_F2010-48)

G - Vectors

- calculate distance between points in 3-space (GSAC_G2010-49)
- write an equation for spheres with given conditions (GSAC_G2010-50)
- calculate the norm of a vector (GSAC_G2010-51)
- find a unit vector for a given vector (GSAC_G2010-52)
- calculate dot products (GSAC_G2010-53)
- find projection vectors (GSAC_G2010-54)
- find direction angles of a vector (GSAC_G2010-55)
- calculate the angle between two vectors (GSAC_G2010-56)
- calculate cross products (GSAC_G2010-57)
- find the volume of parallelepipeds (GSAC_G2010-58)
- find vector parameterizations for lines (GSAC_G2010-59)
- find equations for a plane (GSAC_G2010-60)
- calculate distance from a point to a plane (GSAC_G2010-61)
- determine whether vectors are parallel, skew, or intersecting (GSAC_G2010-62)
- find points of intersections of intersecting vectors (GSAC_G2010-63)
- find the angle between two planes (GSAC_G2010-64)
- determine the co-planarity of vectors (GSAC_G2010-65)
- find unit normal vectors for a plane (GSAC_G2010-66)
- find a set of scalar parametric equations for lines formed by the intersection of planes (GSAC_G2010-67)

H - Vector Calculus

- integrate vectors (GSAC_H2010-68)
- apply the rules of differentiation to find the derivative of vectors (GSAC_H2010-69)
- find the tangent vector at a given point (GSAC_H2010-70)
- sketch curves defined by vectors (GSAC_H2010-71)
- calculate the arc length of a curve defined in vector form (GSAC_H2010-72)
- find the angular speed and the magnitude of the acceleration of a particle moving along a curve (GSAC_H2010-73)
- calculate acceleration vectors (GSAC_H2010-74)

Mathematics - Analysis and Advanced Topics

A - Process Skills

- use appropriate technology to solve mathematical problems (GPS) (GSAT_A2008-1)
- build new mathematical knowledge through problem-solving (GPS) (GSAT_A2008-2)
- solve problems that arise in mathematics and in other areas (GPS) (GSAT_A2008-3)
- apply and adapt a variety of appropriate strategies to solve problems (GPS) (GSAT_A2008-4)
- monitor and reflect on the process of mathematical problem-solving (GPS) (GSAT_A2008-5)
- recognize reasoning and proof (evidence) as fundamental aspects of mathematics (GPS) (GSAT_A2008-6)
- make and investigate mathematical conjectures (GPS) (GSAT_A2008-7)
- investigate, develop, and evaluate mathematical arguments and proofs (GPS) (GSAT_A2008-8)
- select and use various types of reasoning and methods of proof (GPS) (GSAT_A2008-9)
- organize and consolidate mathematical thinking (GPS) (GSAT_A2008-10)
- communicate mathematical thinking coherently to peers, teachers, and others (GPS) (GSAT_A2008-11)
- analyze and evaluate the mathematical thinking and strategies of others (GPS) (GSAT_A2008-12)
- use the terminology and language of mathematics to express mathematical ideas precisely (GPS) (GSAT_A2008-13)
- recognize and use connections among mathematical ideas (GPS) (GSAT_A2008-14)
- explain how mathematical ideas interconnect and build on one another to produce a coherent whole (GPS) (GSAT_A2008-15)
- recognize and apply mathematics in contexts outside of mathematics (GPS) (GSAT_A2008-16)
- create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas (GPS) (GSAT_A2008-17)
- select, apply, and translate among mathematical representations to solve problems (GPS) (GSAT_A2008-18)
- use representations to model and interpret physical, social, and mathematical phenomena (GPS) (GSAT_A2008-19)

B - Algebra

- investigate and explain characteristics of exponential functions, including domain and range, asymptotes, zeros, intercepts, intervals of increase and decrease, rates of change, and end behavior (GPS) (GSAT_B2008-20)
- graph functions as transformations of $f(x) = ax$ (GPS) (GSAT_B2008-21)
- solve simple exponential equations and inequalities analytically, graphically, and by using appropriate technology (GPS) (GSAT_B2008-22)
- use basic exponential functions as models of real phenomena (GPS) (GSAT_B2008-23)
- explain that geometric sequences are exponential functions with domains that are sets of whole numbers (GPS) (GSAT_B2008-24)
- interpret the constant ratio in a geometric sequence as the base of the associated exponential function (GPS) (GSAT_B2008-25)
- analyze the characteristics of functions and their inverses, including one-to-oneness, domain, and range (GPS) (GSAT_B2008-26)
- determine inverses of linear, quadratic, and power functions and functions of the form $f(x) = a/x$, including the use of restricted domains (GPS) (GSAT_B2008-27)
- analyze the graphs of functions and their inverses (GPS) (GSAT_B2008-28)
- use composition to verify that functions are inverses of each other (GPS) (GSAT_B2008-29)

Mathematics

B - Algebra (*continued*)

- graph simple polynomial functions as translations of the function $f(x) = ax^n$ (GPS) (GSAT_B2008-30)
- define and understand the properties of n th roots (GPS) (GSAT_B2008-31)
- add, subtract, multiply, and invert matrices choosing appropriate methods, including technology (GPS) (GSAT_B2008-32)
- find the inverses of two-by-two and three-by-three matrices using pencil and paper, and find inverses of larger matrices using technology (GPS) (GSAT_B2008-33)
- examine the properties of matrices, contrasting them with properties of real numbers (GPS) (GSAT_B2008-34)
- represent a system of linear equations as a matrix equation (GPS) (GSAT_B2008-35)
- solve matrix equations using inverse matrices (GPS) (GSAT_B2008-36)
- represent and solve realistic problems using systems of linear equations (GPS) (GSAT_B2008-37)
- solve systems of inequalities in two variables, showing the solutions graphically (GPS) (GSAT_B2008-38)
- represent and solve realistic problems using linear programming (GPS) (GSAT_B2008-39)
- apply matrix representations of vertex-edge graphs (GPS) (GSAT_B2008-40)
- use graphs to represent realistic situations (GPS) (GSAT_B2008-41)
- use matrices to represent graphs, and solve problems that can be represented by graphs (GPS) (GSAT_B2008-42)
- recognize sequences as functions with domains that are sets of whole numbers (GPS) (GSAT_B2008-43)
- investigate arithmetic series and various ways of computing their sums (GPS) (GSAT_B2008-44)
- find and use recursive and explicit formulae for the terms of sequences (GPS) (GSAT_B2008-45)
- analyze and use simple arithmetic and geometric sequences (GPS) (GSAT_B2008-46)
- investigate and analyze limits of sequences (GPS) (GSAT_B2008-47)
- use mathematical induction to find and prove formulae for sums of finite series (GPS) (GSAT_B2008-48)
- find and apply the sums of finite and, where appropriate, infinite arithmetic and geometric series (GPS) (GSAT_B2008-49)
- use summation notation to express series (GPS) (GSAT_B2008-50)
- determine geometric series and their limits (GPS) (GSAT_B2008-51)
- explore sequences of partial sums of arithmetic series as examples of quadratic functions (GPS) (GSAT_B2008-52)

C - Geometry

- find equations of circles (GPS) (GSAT_C2008-53)
- graph a circle given an equation in general form (GPS) (GSAT_C2008-54)
- find the equation of a tangent line to a circle at a given point (GPS) (GSAT_C2008-55)
- solve a system of equations involving a circle and a line (GPS) (GSAT_C2008-56)
- solve a system of equations involving two circles (GPS) (GSAT_C2008-57)
- analyze and graph the equations of parabolas, circles, ellipses, and hyperbolas (GPS) (GSAT_C2008-58)
- convert equations of conics by completing the square (GPS) (GSAT_C2008-59)
- recognize, analyze, and graph the equations of the conic sections (parabolas, circles, ellipses, and hyperbolas) (GPS) (GSAT_C2008-60)
- graph conic sections, identifying fundamental characteristics (GPS) (GSAT_C2008-61)
- write equations of conic sections given appropriate information (GPS) (GSAT_C2008-62)

Science - Advanced Physics / Chemistry

A - Characteristics of Science

- evaluate the importance of curiosity, honesty, openness, and skepticism in science (GPS) (GSPC_A2007-1)
- apply standard safety practices to all classroom laboratory and field investigations (GPS) (GSPC_A2007-2)
- identify and investigate problems scientifically (GPS) (GSPC_A2007-3)
- use tools and instruments for observing, measuring, and manipulating scientific equipment and materials (GPS) (GSPC_A2007-4)
- use appropriate SI units in measurements, calculations, and quantity conversions (GPS) (GSPC_A2007-5)
- apply computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations (GPS) (GSPC_A2007-6)
- communicate scientific investigations and information clearly (GPS) (GSPC_A2007-7)

B - Nature of Science

- analyze how scientific knowledge is developed (GPS) (GSPC_B2007-8)
- apply the process of scientific inquiry (GPS) (GSPC_B2007-9)
- read scientific materials to establish context for subject matter, develop vocabulary, and to be aware of current research (GPS) (GSPC_B2007-10)

C - Inquiry-based Exploration of the Fundamental Forces

- analyze the relationships in kinematics and gravity through the re-enactment of Galileo's experiments (GPS) (GSPC_C2007-11)

D - Inquiry-based Exploration of Electrical and Magnetic Forces via Modern Atomic Theory

- evaluate the relationship between electrical and magnetic forces through the study of Faraday's and Maxwell's discoveries (GPS) (GSPC_D2007-12)
- explain current theories on nuclear forces and structure (GPS) (GSPC_D2007-13)

E - Inquiry-based Exploration of Newton's Laws

- analyze the relationship between force and acceleration (GPS) (GSPC_E2007-14)
- apply the concept of inertia to everyday experiences (GPS) (GSPC_E2007-15)
- apply the concept of equal and opposite forces to everyday experiences (GPS) (GSPC_E2007-16)

F - Inquiry-based Exploration of Conservation Laws

- explain why the Law of Conservation of Mass is considered the founding principle of modern chemistry (GPS) (GSPC_F2007-17)
- demonstrate and explain, through writing and balancing chemical equations, how the Law of Conservation of Mass is used to determine the five major types of chemical reactions (synthesis, decomposition, single replacement, double replacement, and combustion) (GPS) (GSPC_F2007-18)
- apply concepts of the mole and Avogadro's number to conceptualize and calculate empirical/molecular formulas; mass, molar and molecular relationships; and molar volumes of gases (GPS) (GSPC_F2007-19)
- determine stoichiometric relationships of reactions including limiting reactants through experimentation (GPS) (GSPC_F2007-20)
- explain the role of equilibrium in chemical reactions (GPS) (GSPC_F2007-21)
- experimentally determine the role of kinetics in chemical reactions (GPS) (GSPC_F2007-22)
- compare and contrast chemical and nuclear reactions with specific emphasis to the Law of Conservation of Mass (GPS) (GSPC_F2007-23)
- trace the development of the Law of Conservation of Energy (GPS) (GSPC_F2007-24)
- explain and define momentum as a derived, vector quantity (GPS) (GSPC_F2007-25)

G - Application of Fundamental Forces and Basic Laws

- investigate the structure of matter through materials science (GPS) (GSPC_G2007-27)
- investigate the reaction of matter using food science (GPS) (GSPC_G2007-28)
- investigate the processes of separating matter via forensic science (GPS) (GSPC_G2007-29)

Science - Anatomy and Physiology

A - Characteristics of Science

- demonstrate accepted methods, processes, and procedures for conducting anatomical and physiological studies (GPS) (GSSP_A2008-1)
- read scientific materials to establish context for subject matter, to develop vocabulary, and to be aware of current research (GPS) (GSSP_A2008-2)
- use the scientific method to collect and/or analyze scientific data (GSSP_A2008-3)

B - Academic Knowledge and Skills

- analyze the interdependence of the various body systems to each other and to the body as a whole (GPS) (GSSP_B2008-4)
- analyze the structure and function of the integumentary, skeletal, and muscular systems as they relate to the protection, support, and movement of the human body (GPS) (GSSP_B2008-5)
- analyze the role of the cardiovascular system in transport and exchange of materials throughout the body and its contribution to all body functions (GPS) (GSSP_B2008-6)
- analyze the general defense mechanisms of the immune and lymphatic systems (GPS) (GSSP_B2008-7)
- explain the role of the respiratory system in gas exchange (GPS) (GSSP_B2008-8)
- analyze the steps involved in the ingestion and digestion of food, the absorption of nutrients, and the elimination of undigested substances (GPS) (GSSP_B2008-9)
- analyze the dependence of the body on the endocrine and nervous systems to integrate and coordinate physiological activities in the maintenance of homeostasis (GSSP_B2008-10)
- analyze the role of the reproductive system as it pertains to the growth and development of humans (GPS) (GSSP_B2008-11)
- analyze the effects of aging on body systems (GPS) (GSSP_B2008-12)

Science - Analytical Forensic Investigation

A -

- investigate microscopy unit and the application of physics in analytical investigations (GSFI_A2010-1)
- explore the history of optics and refraction (GSFI_A2010-2)
- explain crystal lattices and polarization (GSFI_A2010-3)
- explain Kohler illumination and polarized light microscopy, including fibers, chemical microscopy, and sand and soil (GSFI_A2010-4)
- explain stereomicroscopy including materials science, manufacturing and microscopic characteristics of fibers, duct tape, trash bags, footwear, tires, and/or glass, fracture matching and pattern recognition, and impact analysis and tool marks (GSFI_A2010-5)
- investigate the role of applied biology (GSFI_A2010-6)
- investigate PCR/DNA (GSFI_A2010-7)
- analyze woods and natural fibers (GSFI_A2010-8)
- investigate the role of applied chemistry (GSFI_A2010-9)
- explore organic chemistry with a focus on functional groups (GSFI_A2010-10)
- explain Fourier transform infrared spectroscopical analysis of unknowns and building spectral libraries (GSFI_A2010-11)
- analyze functional groups and structures from mass spectra (isotopes and organic compounds) (GSFI_A2010-12)
- prepare TLC to isolate unknowns for further analysis (analyze inks and separation of organic mixtures) (GSFI_A2010-13)
- investigate extraction and uv-vis spectroscopical analysis (solubility, acid-base extractions, and single, double and triple bonds) (GSFI_A2010-14)

Science - Biochemical Engineering

A - Characteristics of Science

- design, conduct, and communicate scientific investigations (GSBE_A2009-1)
- apply standard safety practices for all classroom laboratory and field investigations (GSBE_A2009-2)
- use technology to collect, observe, measure, and manipulate data and findings (GSBE_A2009-3)
- use valid critical assumptions to draw conclusions (GSBE_A2009-4)
- apply computation and skills necessary for analyzing data and developing conclusions (GSBE_A2009-5)
- communicate scientific investigations clearly (GSBE_A2009-6)
- read scientific materials to establish context for subject matter, develop vocabulary, and develop an awareness of current research (GSBE_A2009-7)
- discuss the importance of curiosity, honesty, openness, and skepticism in science and exhibit these traits in efforts to understand how the world works (GSBE_A2009-8)

B - Academic Knowledge

- explain how biochemical principles affect life processes in mammalian cells (GSBE_B2009-9)
- explain the structure and functional relationship of cell organelles, especially the cell membrane, mitochondria, cytoskeleton, extracellular matrix, and nucleus (GSBE_B2009-10)
- describe the quantitative aspects of membrane transport and cell signaling pathways (GSBE_B2009-11)
- explain how cell signaling modifies gene expression and/or cell function in homeostatic and disrupted states (GSBE_B2009-12)
- explain the mechanisms regulating cell growth and death and use biotechnological techniques to modify cell growth (GSBE_B2009-13)
- explain basic regulatory mechanisms of gene expression and protein synthesis and apply this knowledge to problems in biomedical engineering (GSBE_B2009-14)
- apply biotechnology processes to modify and measure gene expression, including PCR, RNA silencing, and bio-imaging (GSBE_B2009-15)
- describe homeostasis and how it is achieved in cell systems and be able to apply this information to product design problems (GSBE_B2009-16)
- apply molecular and imaging technologies used in the biomedical research to the study of cellular physiology (GSBE_B2009-17)
- explore the development and delivery of biotechnology to the market place (GSBE_B2009-18)

Science - Biology

A - Characteristics of Science

- read scientific materials to establish context for subject matter, develop vocabulary, and to be aware of current research (GPS, HSGT) (GSBI_A2008-1)
- discuss the importance of curiosity, honesty, openness, and skepticism in science and exhibit these traits in efforts to understand how the world works (GPS) (GSBI_A2008-2)
- use the scientific method to collect and/or analyze scientific data (GSBI_A2008-3)

B - Academic Knowledge and Skills

- analyze the relationship between structures and functions in living cells (GPS, HSGT) (GSBI_B2008-4)
- analyze how biological traits are passed on to successive generations (GPS, HSGT) (GSBI_B2008-5)
- compare how structure and function vary between the six kingdoms (archaebacteria, eubacteria, protists, fungi, plants, and animals) (GPS, HSGT) (GSBI_B2008-6)
- analyze the dependence of all organisms on one another and the flow of energy and matter within their ecosystems (GPS, HSGT) (GSBI_B2008-7)

B - Academic Knowledge and Skills (*continued*)

- analyze the role of natural selection in the development of the theory of evolution (GPS, HSGT) (GSBI_B2008-8)

Science - Genetics

A - Characteristics of Science

- design and conduct scientific investigations (GSGE_A2009-1)
- apply standard safety practices for all classroom, laboratory, and field investigations (GSGE_A2009-2)
- use technology to collect, observe, measure, and manipulate data and findings (GSGE_A2009-3)
- use valid critical assumptions to draw conclusions (GSGE_A2009-4)
- apply computation and skills necessary for analyzing data and developing conclusions (GSGE_A2009-5)
- communicate scientific investigations clearly (GSGE_A2009-6)
- read scientific materials to establish context for subject matter, develop vocabulary, and develop an awareness of current research (GSGE_A2009-7)
- discuss the importance of curiosity, honesty, openness, and skepticism in science and exhibit these traits in efforts to understand how the world works (GSGE_A2009-8)

B - Academic Knowledge

- explain genes and their functions and expressions (GSGE_B2009-9)
- explain the recombinant DNA technology (GSGE_B2009-10)
- explain gene segregation (GSGE_B2009-11)
- explain the regulation of gene expression in bacteria, bacteriophages, and eukaryotes (GSGE_B2009-12)
- identify genetic changes including DNA mutation and repair, human disease, and the detection of mutations (GSGE_B2009-13)
- explain the genetics of populations including genotypic frequencies and allelic frequencies, Hardy-Weinberg, variation in natural populations, and forces that change gene frequencies (GSGE_B2009-14)

Engineering - Fundamentals of Engineering - Concepts

A - Materials, Tools, and Processes

- identify specific engineering tools, machines, materials, and processes (GPS) (GSFE_A2007-1)
- explain the criteria for selection of appropriate materials, tools, and processes (GPS) (GSFE_A2007-2)
- manipulate materials, tools, and processes safely and effectively (GPS) (GSFE_A2007-3)
- apply appropriate care and maintenance in the use of tools and machines (GPS) (GSFE_A2007-4)

B - Engineering Design Process

- apply the steps of the engineering design process (GPS) (GSFE_B2007-5)

C - Schematics

- use mechanical drafting (GPS) (GSFE_C2007-6)

D - Prototype Modeling

- demonstrate prototype development (GPS) (GSFE_D2007-7)

E - Design Solutions

- use research techniques to develop a design solution (GPS) (GSFE_E2007-8)

F - Design Testing and Evaluation

- utilize research techniques to test and evaluate designed prototypes (GPS) (GSFE_F2007-9)

G - Engineering Documentation

- communicate research findings (GPS) (GSFE_G2007-10)

Engineering - Fundamentals of Engineering - Applications

A - Materials, Tools and Processes

- operate and adjust specific engineering tools, machines, materials, and processes (GSEA_A2008-1)
- develop the criteria for selection of appropriate materials, tools, and processes (GSEA_A2008-2)
- effectively select safe materials, tools, and processes (GSEA_A2008-3)
- safely use materials, tools, and processes (GSEA_A2008-4)
- apply appropriate care and maintenance in the use of tools and machines (GSEA_A2008-5)
- implement the steps of the engineering design process (GSEA_A2008-6)

B - Design Solutions

- conduct research to inform selection of most appropriate alternative (GSEA_B2008-7)
- evaluate prototyped solution effectiveness and modify as needed (GSEA_B2008-8)
- select and defend appropriate research techniques to develop a design solution (GSEA_B2008-9)

C - Design Testing and Evaluation

- analyze data and generate results necessary to attempt to solve the problem or design the solution (GSEA_C2008-10)
- select and defend appropriate research techniques to test and evaluate designed prototypes (GSEA_C2008-11)
- gather relevant research results and conduct analysis of published research, assess the research for threats to validity, and use research to inform problem refinement or solution development (GSEA_C2008-12)

Engineering

D - Engineering Documentation

- communicate research findings (GSEA_D2008-13)
- apply principles of science, engineering, mathematics, interpersonal communication, and teamwork to the solution of engineering problems (GSEA_D2008-14)

Engineering - Introduction to Digital Design

A - STEM Standards

- recognize the systems, components, and processes of a technological system (GPS) (GSDD_A2009-1)
- identify the impact of engineering and technology within global, economic, environmental, and societal contexts (GPS) (GSDD_A2009-2)
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication (GPS) (GSDD_A2009-3)
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems (GPS) (GSDD_A2009-4)
- select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies (GPS) (GSDD_A2009-5)
- develop vocabulary and comprehension skills associated with text materials, problems, descriptions, and laboratory activities associated with engineering and technology education (GPS) (GSDD_A2009-6)
- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (GPS) (GSDD_A2009-7)

B - Materials, Tools, and Process

- identify specific engineering tools, machines, materials, and processes (GPS) (GSDD_B2009-8)
- explain the criteria for selection of appropriate materials, tools, and processes (GPS) (GSDD_B2009-9)
- manipulate materials, tools, and processes safely and effectively (GPS) (GSDD_B2009-10)
- apply appropriate care and maintenance in the use of tools and machines (GPS) (GSDD_B2009-11)

C - Engineering Design Process

- apply the steps of the engineering design process (GPS) (GSDD_C2009-12)

D - Devices and Logic

- analyze characteristics of digital and analog systems (GPS) (GSDD_D2009-13)
- demonstrate the use of names, symbols, truth tables, and Boolean expression for each of the seven basic logic gates (GPS) (GSDD_D2009-14)
- demonstrate the use of several commonly used digital codes, including the conversion of decimal numbers and letters to code (GPS) (GSDD_D2009-15)
- use truth tables and interpret waveforms to determine flip-flop modes of operation and outputs (GPS) (GSDD_D2009-16)
- determine the output for a variety of counters based on a series of inputs (GPS) (GSDD_D2009-17)

Engineering - Nanotechnology and Materials Engineering

A - STEM Standards

- recognize the systems, components, and processes of a technological system (GPS) (GSEN_A2010-1)
- identify the impact of engineering and technology within global, economic, environmental, and societal contexts (GPS) (GSEN_A2010-2)
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication (GPS) (GSEN_A2010-3)
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems (GPS) (GSEN_A2010-4)
- select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies (GPS) (GSEN_A2010-5)
- develop vocabulary and comprehension skills associated with text materials, problems, descriptions, and laboratory activities associated with engineering and technology education (GPS) (GSEN_A2010-6)
- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (GPS) (GSEN_A2010-7)

B - Academic Knowledge

- explain the universal systems model as it relates to manufacturing (GPS) (GSEN_B2010-8)
- explain and apply safe work practices while performing tasks (GPS) (GSEN_B2010-9)
- identify materials and resources used in manufacturing (GPS) (GSEN_B2010-10)
- describe the essential systems and processes involved in manufacturing (GPS) (GSEN_B2010-11)
- perform a pre-planned introductory manufacturing activity applying correct safety procedures, appropriate use of materials, and processing operations (GPS) (GSEN_B2010-12)
- understand the differences between nonrenewable, renewable, and inexhaustible types of energy sources and how that affects their world (GPS) (GSEN_B2010-13)
- define alternative energy and list several alternative sources as well as discuss the regional implications of each, including but not limited to economic, environmental, and sustainability issues (GPS) (GSEN_B2010-14)
- define nuclear power and discuss it in terms of its positive and negative impacts as well as its relevancy to various situations in today's society (GPS) (GSEN_B2010-15)
- discuss the future trends of energy, power, and transportation (GPS) (GSEN_B2010-16)
- develop, through research, an alternative energy system that will demonstrate understanding of a unique, as well as appropriate, approach to energy generation (GPS) (GSEN_B2010-17)

Engineering - Research, Design, and Project Management

A - STEM Standards

- recognize the systems, components, and processes of a technological system (GPS) (GSRD_A2009-1)
- identify the impact of engineering and technology within global, economic, environmental, and societal contexts (GPS) (GSRD_A2009-2)
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication (GPS) (GSRD_A2009-3)
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems (GPS) (GSRD_A2009-4)
- select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies (GPS) (GSRD_A2009-5)

Engineering

A - STEM Standards (*continued*)

- develop vocabulary and comprehension skills associated with text materials, problems, descriptions, and laboratory activities associated with engineering and technology education (GPS) (GSRD_A2009-6)

B - Leadership Development

- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities (GPS) (GSRD_B2009-7)
- demonstrate proficiency in the formal research techniques necessary to understand a technical problem (GPS) (GSRD_B2009-8)
- use research techniques to develop a design solution for/to a technological problem (GPS) (GSRD_B2009-9)
- utilize research techniques to test and evaluate designed prototypes (GPS) (GSRD_B2009-10)
- communicate research findings effectively (GPS) (GSRD_B2009-11)

Engineering - Robotics and Mechatronics

A - STEM Standards

- recognize the systems, components, and processes of a technological system (GPS) (GSRM_A2009-1)
- identify the impact of engineering and technology within global, economic, environmental, and societal contexts (GPS) (GSRM_A2009-2)
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication (GPS) (GSRM_A2009-3)
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems (GPS) (GSRM_A2009-4)
- select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies (GPS) (GSRM_A2009-5)
- develop vocabulary and comprehension skills associated with text materials, problems, descriptions, and laboratory activities associated with engineering and technology education (GPS) (GSRM_A2009-6)
- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (GPS) (GSRM_A2009-7)

B - Leadership Development

- explain the history of automated systems and the benefits of those systems to manufacturing in a global society (GPS) (GSRM_B2009-8)
- identify and explain the major engineering tasks in organizing automated manufacturing (GPS) (GSRM_B2009-9)
- discuss the systems and applications of automation including: AGV, PLC, CNC, CIM, CAD, CAM, and robotics as essential to succeeding globally in a manufacturing market (GPS) (GSRM_B2009-10)
- outline the utilization of programmable control devices and data transfer (GPS) (GSRM_B2009-11)
- apply the principles of PLC, CIM, CAD, CAM, and robotics in the manufacturing of a product (GPS) (GSRM_B2009-12)

Engineering - Advanced Robotics and Mechatronics

A - STEM Standards

- recognize the systems, components, and processes of a technological system (GPS) (GSER_A2010-1)
- identify the impact of engineering and technology within global, economic, environmental, and societal contexts (GPS) (GSER_A2010-2)

Engineering

A - STEM Standards (*continued*)

- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication (GPS) (GSER_A2010-3)
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems (GPS) (GSER_A2010-4)
- select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies (GPS) (GSER_A2010-5)
- develop vocabulary and comprehension skills associated with text materials, problems, descriptions, and laboratory activities associated with engineering and technology education (GPS) (GSER_A2010-6)
- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (GPS) (GSER_A2010-7)

B - Academic Knowledge

- explain the history of automated systems and the benefits of those systems to manufacturing in a global society (GPS) (GSER_B2010-8)
- identify and explain the major engineering tasks in organizing automated manufacturing (GPS) (GSER_B2010-9)
- discuss the systems and applications of automation including AGV, PLC, CNC, CIM, CAD, CAM, and robotics as essential to succeeding globally in a manufacturing market (GPS) (GSER_B2010-10)
- outline the utilization of programmable control devices and data transfer (GPS) (GSER_B2010-11)
- apply the principles of PLC, CIM, CAD, CAM, and robotics in the manufacturing of a product (GPS) (GSER_B2010-12)

Engineering - Advanced AC and DC Circuits

A - STEM Standards

- recognize the systems, components, and processes of a technological system (GPS) (GSED_A2010-1)
- identify the impact of engineering and technology within global, economic, environmental, and societal contexts (GPS) (GSED_A2010-2)
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication (GPS) (GSED_A2010-3)
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems (GPS) (GSED_A2010-4)
- select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies (GPS) (GSED_A2010-5)
- develop vocabulary and comprehension skills associated with text materials, problems, descriptions, and laboratory activities associated with engineering and technology education (GPS) (GSED_A2010-6)
- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (GPS) (GSED_A2010-7)

B - Academic Knowledge

- identify the history and development of analog circuits (GPS) (GSED_B2010-8)
- identify and define operational characteristics of power supplies and amplifiers (GPS) (GSED_B2010-9)
- identify and define oscillator characteristics and applications (GPS) (GSED_B2010-10)
- identify and define operating characteristics and applications of various communication circuits (GPS) (GSED_B2010-11)
- identify characteristics and construction of integrated circuits (GPS) (GSED_B2010-12)
- identify and define characteristics of solid state control devices and circuits (GPS) (GSED_B2010-13)

Engineering - Appropriate and Alternative Energy Technologies

A - STEM Standards

- recognize the systems, components, and processes of a technological system (GPS) (GSEE_A2010-1)
- identify the impact of engineering and technology within global, economic, environmental, and societal contexts (GPS) (GSEE_A2010-2)
- design technological problem solutions using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication (GPS) (GSEE_A2010-3)
- apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems (GPS) (GSEE_A2010-4)
- select and demonstrate techniques, skills, tools, and understanding related to energy and power, bio-related, communication, transportation, manufacturing, and construction technologies (GPS) (GSEE_A2010-5)
- develop vocabulary and comprehension skills associated with text materials, problems, descriptions, and laboratory activities associated with engineering and technology education (GPS) (GSEE_A2010-6)
- develop leadership and interpersonal problem-solving skills through participation in co-curricular activities associated with the Technology Student Association (GPS) (GSEE_A2010-7)

B - Academic Knowledge

- describe the differences between nonrenewable, renewable, and inexhaustible types of energy sources and how that affects their world (GPS) (GSEE_B2010-8)
- define alternative energy and list several alternative sources as well as discuss the regional implications of each, including but not limited to, economic, environmental, and sustainability issues (GPS) (GSEE_B2010-9)
- define nuclear power and discuss it in terms of its positive and negative impacts as well as its relevancy to various situations in today's society (GPS) (GSEE_B2010-10)
- analyze the future trends of energy, power, and transportation (GPS) (GSEE_B2010-11)
- develop an alternative energy system that will demonstrate their understanding of a unique, as well as appropriate, approach to energy generation (GPS) (GSEE_B2010-12)

Humanities - Introduction to Humanities

A - Listening, Speaking, and Viewing

- participate in student-to-teacher, student-to-student, and group verbal interactions (GPS) (GSIH_A2011-1)
- formulate reasoned judgments and respond effectively to written and oral communication (texts and media [e.g., television, radio, film productions, and electronic media]) (GPS) (GSIH_A2011-2)
- deliver and respond to focused, coherent, and polished presentations in ways that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description (GPS) (GSIH_A2011-3)

B - Comprehension

- identify evidence (e.g., examples of diction, imagery, point of view, figurative language, symbolism, plot events, and main ideas) in a variety of texts representative of different genres (e.g., poetry, prose [short story, novel, essay, editorial, biography, satire], technical writing, and drama) and use this evidence as the basis for interpretation (GPS) (GSIH_B2011-4)
- read with rhythm, flow, and meter that sounds like everyday speech (GPS) (GSIH_B2011-5)
- identify, analyze, and apply knowledge of the structures and elements of fiction and provide evidence from the text to support understanding (GPS) (GSIH_B2011-6)
- identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction and/or informational materials and provide evidence from the text to support understanding (GPS) (GSIH_B2011-7)
- identify and respond to differences in style and subject matter in poems by a variety of contemporary and canonical poets (GPS) (GSIH_B2011-8)
- identify, analyze, and apply knowledge of the themes, structures, and elements of dramatic literature and provide evidence from the text to support understanding (GPS) (GSIH_B2011-9)
- identify, analyze, and apply knowledge of theme in literary works from various genres and provide evidence from the works to support understanding (GPS) (GSIH_B2011-10)
- demonstrate understanding of literary works by relating them to contemporary contexts or historical background (GPS) (GSIH_B2011-11)
- employ a variety of writing genres to demonstrate a comprehensive grasp of significant ideas in selected literary works by composing essays, narratives, poems, or technical documents (GPS) (GSIH_B2011-12)
- evaluate quality of reading material and its content based on author's purpose, meaning, and structure (GPS) (GSIH_B2011-13)
- articulate differences in the artistic merit of various literary works using a precise vocabulary (e.g., classic, masterpiece, derivative, pulp, etc.) and present textual evidence to support aesthetic judgments (GPS) (GSIH_B2011-14)

C - Reading Across the Curriculum

- read a minimum of 25 grade-level appropriate books or book equivalents (approximately 1,000,000 words) per year from a variety of content areas (both nonfiction and fictional texts in a variety of genres and modes of discourse) including technical texts related to various content areas (GPS) (GSIH_C2011-15)
- use appropriate strategies to read and comprehend content-area texts (GPS) (GSIH_C2011-16)
- participate in discussions related to curricular learning in all content areas (GPS) (GSIH_C2011-17)
- acquire new vocabulary in each content area and use it correctly (GPS) (GSIH_C2011-18)
- establish a context for information acquired by reading across content areas (GPS) (GSIH_C2011-19)

D - Writing

- set a context for writing and engage the reader (GPS) (GSIH_D2011-20)
- establish a clear, distinctive, and coherent thesis, perspective, or controlling idea (GPS) (GSIH_D2011-21)
- maintain an appropriate and consistent tone and coherent focus throughout (GPS) (GSIH_D2011-22)
- select a focus, structure, and point of view relevant to the purpose, genre expectations, audience, length, and format requirements (GPS) (GSIH_D2011-23)
- construct arguable topic sentences, when applicable, to guide unified paragraphs (GPS) (GSIH_D2011-24)

Humanities

D – Writing (*continued*)

- use precise language, action verbs, sensory details, appropriate modifiers, and active rather than passive voice (GPS) (GSIH_D2011-25)
- write texts of a length appropriate to address the topic or tell the story (GPS) (GSIH_D2011-26)
- use appropriate organizational structures for conveying information (e.g., chronological order, cause and effect, order of importance, spatial, similarity and difference, and posing and answering a question) and appropriate to the type of composition (GPS) (GSIH_D2011-27)
- support statements and claims with anecdotes, descriptions, facts and statistics, and specific examples (GPS) (GSIH_D2011-28)
- use logical and effective transitions between ideas and paragraphs (GPS) (GSIH_D2011-29)
- attain appropriate closure (GPS) (GSIH_D2011-30)
- produce narrative writing that applies polished narrative strategies acquired in previous grades to other genres of writing such as reflective compositions, historical investigative reports, and literary analyses, by raising the level of critical thinking skills and rhetorical techniques (GPS) (GSIH_D2011-31)
- produce expository (informational) writing to convey information and ideas from primary and secondary sources accurately and coherently (GPS) (GSIH_D2011-32)
- produce persuasive writing and apply persuasive strategies acquired in previous grades to other genres of writing such as expository compositions, historical investigative reports, and literary analyses, by raising the level of critical thinking skills and rhetorical techniques (GPS) (GSIH_D2011-33)
- produce technical writing that reports technical information and/or conveys ideas clearly, logically, and purposefully to a particular audience (GPS) (GSIH_D2011-34)
- use research and technology to support writing (GPS) (GSIH_D2011-35)
- practice both timed and process writing and, when applicable, use the writing process to develop, revise, and evaluate writing (GPS) (GSIH_D2011-36)

E - Conventions

- demonstrate understanding and control of the rules of standard American English, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats (GPS) (GSIH_E2011-37)
- use appropriate manuscript form, realizing that different forms of writing require different formats (GPS) (GSIH_E2011-38)

F - Accessing Information / Reference Skills

- use table of contents, index, glossary, and appendix to locate information in books and reference works (GPS) (GSIH_F2007-39)
- use research venues to gather information: books, periodicals, dictionaries, thesauri, encyclopedias, atlases, almanacs, CD-Rom, databases, search engines to locate databases, online information, and the Internet (GPS) (GSIH_F2007-40)
- use a study-reading strategy to study content-area texts (GPS) (GSIH_F2007-41)
- select and narrow topic for research questions (GPS) (GSIH_F2007-42)
- formulate appropriate research questions (GPS) (GSIH_F2007-43)
- determine the adequacy and/or relevancy of information (GPS) (GSIH_F2007-44)
- use logical and effective transitions between ideas and paragraphs (GPS) (GSIH_F2007-45)
- draw conclusions and make generalizations (GPS) (GSIH_F2007-46)
- apply critical-thinking skills (GPS) (GSIH_F2007-47)
- use and apply knowledge about maps and spatial data sets (GPS) (GSIH_F2007-48)
- apply sources of geographical ideas and data, including field and census data (GPS) (GSIH_F2007-49)

G - Study Skills

- evaluate long- and short-term goals to make visions a reality (GPS) (GSIH_G2007-50)
- establish and effectively apply time management skills including schedules, organization, and recordkeeping (GPS) (GSIH_G2007-51)
- analyze and apply proper study techniques (GPS) (GSIH_G2007-52)

H - Population

- apply geographical analysis of population (density, distribution, and scale) and the consequences of various densities and distributions (patterns of composition: age, sex, race and ethnicity) (GPS) (GSIH_H2007-53)
- assess population growth and decline over time and space to include historical trends and projections for the future: patterns of fertility, mortality, and health; regional variations of demographic transitions; and the effects of pro- and anti-nationalist policies (GPS) (GSIH_H2007-54)
- evaluate the significance of population movement (scaled voluntary and involuntary migration), short-term, local movements, and activity space (GPS) (GSIH_H2007-55)

I - Cultural Patterns and Processes

- describe the concepts of culture to include traits and complexes, diffusion, acculturation, and cultural regions and realm (GPS) (GSIH_I2007-56)
- explain why cultural differences exist based on language, religion, ethnicity, gender, and popular and folk culture (GPS) (GSIH_I2007-57)
- examine the environmental impact of cultural attitudes and practices (GPS) (GSIH_I2007-58)
- evaluate cultural landscapes and cultural identity based on values and preferences as well as symbolic landscapes and sense of place (GPS) (GSIH_I2007-59)

J - Political Organization of Space

- examine the territorial dimensions of politics (territoriality, boundaries, and identity, interaction, and exchange) (GPS) (GSIH_J2007-60)
- describe the evolution of the contemporary political patterns to include territorial assumptions underlying the nation-state ideal as well as colonialism and imperialism (GPS) (GSIH_J2007-61)
- explain the challenges to inherited political-territorial arrangements (changing sovereignty, fragmentation, unification, and alliances) and spatial relationships between political, ethnicity, economical, and environmental patterns (GPS) (GSIH_J2007-62)
- examine rural land use and settlement patterns (models of land use, economic activities, and settlement patterns associated with major agricultural types) (GPS) (GSIH_J2007-63)
- describe modern commercial agriculture (GPS) (GSIH_J2007-64)

K - Industrialization and Development

- identify key concepts in industrialization and development (GPS) (GSIH_K2007-65)

L - Cities and Urban Land Use

- apply concepts of urbanism to land use impacts (GPS) (GSIH_L2007-66)
- describe the origin and evolution of cities (patterns of urbanization, cultural context and urban form, urban growth and rural-urban migration, global and mega cities, models of urban cities and systems, and comparative models of internal city structure) (GPS) (GSIH_L2007-67)
- explain the functional character of contemporary cities including changing employment mix and the changing demographic and social structures (GPS) (GSIH_L2007-68)
- evaluate the built environment and social space including transportation and infrastructure; political organization of urban areas; urban planning and design; patterns of race, ethnicity, gender and class; uneven development; ghettoization; and gentrification (GPS) (GSIH_L2007-69)

Humanities - Humanities II

A - Listening, Speaking, and Viewing

- participate in student-to-teacher, student-to-student, and group verbal interactions (GPS) (GSH2_A2011-1)
- formulate reasoned judgments and respond effectively to written and oral communication (text and media [e.g., television, radio, film productions, and electronic media]) (GPS) (GSH2_A2011-2)
- deliver and respond to focused, coherent, and polished presentations in ways that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description (GPS) (GSH2_A2011-3)

B - Comprehension

- identify evidence (e.g., examples of diction, imagery, point of view, figurative language, symbolism, plot events, main ideas, and cultural characteristics) in a variety of texts representative of different genres (e.g., poetry, prose [short story, novel, essay, editorial, biography], and drama) and use this evidence as the basis for interpretation (GPS) (GSH2_B2011-4)
- identify, analyze, and apply knowledge of the structures and elements of fiction from around the world and provide evidence from the text to support understanding (GPS) (GSH2_B2011-5)
- identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction and/or informational materials and provide evidence from the text to support understanding (GPS) (GSH2_B2011-6)
- identify and analyze elements of poetry from various periods of world literature and provide evidence from the text to support understanding (GPS) (GSH2_B2011-7)
- identify, analyze, and apply knowledge of the themes, structures, and elements of dramatic literature from around the world and provide evidence from the text to support understanding (GPS) (GSH2_B2011-8)
- identify, analyze, and apply knowledge of theme in a work of world literature and provide evidence from the text to support understanding (GPS) (GSH2_B2011-9)
- identify themes and archetypes commonly found in world literature and compare and contrast these in the literature of various world cultures (GPS) (GSH2_B2011-10)
- identify and analyze the beliefs and values (e.g., origin beliefs, moral codes, gender concepts, romantic and familial relationships) represented in world literature and compare and contrast these beliefs and values in the literature of various world cultures (GPS) (GSH2_B2011-11)
- identify and analyze the social, political, and historical factors that have led to differences in the content, style, and development of world literature (GPS) (GSH2_B2011-12)
- identify and apply criteria for distinguishing between poor, good, and great works of world literature (GPS) (GSH2_B2011-13)
- articulate differences in the artistic merit of various literary works using a precise vocabulary (e.g., classic, masterpiece, derivative, pulp, etc.) and present textual evidence to support aesthetic judgments (GPS) (GSH2_B2011-14)
- develop an ability to distinguish between merely popular works of literature and those that possess significant literary merit, and explain the differences in content and style that lead to such distinctions (GPS) (GSH2_B2011-15)
- demonstrate understanding of literary works from around the world by relating them to their contemporary context or historical background as well as to works from other time periods (GPS) (GSH2_B2011-16)
- employ a variety of writing genres to demonstrate a comprehensive grasp of significant ideas in selected literary works by composing essays, narratives, poems, or technical documents (GPS) (GSH2_B2011-17)
- acquire new vocabulary and use it correctly in reading and writing (GPS) (GSH2_B2011-18)

C - Reading Across the Curriculum

- read a minimum of 25 grade-level appropriate books or book equivalents (approximately 1,000,000 words) per year from a variety of content areas (both nonfiction and fictional texts in a variety of genres and modes of discourse) including technical texts related to various content areas (GPS) (GSH2_C2011-19)
- use appropriate strategies to read and comprehend content-area texts (GPS) (GSH2_C2011-20)
- participate in discussions related to curricular learning in all content areas (GPS) (GSH2_C2011-21)
- acquire new vocabulary in each content area and use it correctly (GPS) (GSH2_C2011-22)
- establish a context for information acquired by reading across content areas (GPS) (GSH2_C2011-23)

Humanities

D - Writing

- set a context for writing and engage the reader (GPS) (GSH2_D2011-24)
- establish a clear, distinctive, and coherent thesis, perspective, or controlling idea (GPS) (GSH2_D2011-25)
- maintain an appropriate and consistent tone and coherent focus throughout (GPS) (GSH2_D2011-26)
- select a focus, structure, and point of view relevant to the purpose, genre expectations, audience, length, and format requirements (GPS) (GSH2_D2011-27)
- construct arguable topic sentences, when applicable, to guide unified paragraphs (GPS) (GSH2_D2011-28)
- use precise language, action verbs, sensory details, appropriate modifiers, and active rather than passive voice (GPS) (GSH2_D2011-29)
- write texts of a length appropriate to address the topic or tell the story (GPS) (GSH2_D2011-30)
- use appropriate organizational structures for conveying information (e.g., chronological order, cause and effect, order of importance, spatial, similarity and difference, and posing and answering a question) and appropriate to the type of composition (GPS) (GSH2_D2011-31)
- support statements and claims with anecdotes, descriptions, facts and statistics, and specific examples (GPS) (GSH2_D2011-32)
- use logical and effective transitions between ideas and paragraphs (GPS) (GSH2_D2011-33)
- attain appropriate closure (GPS) (GSH2_D2011-34)
- use language efficiently and economically, communicating maximum information with minimum waste (e.g., avoiding repetition, redundancy, wordy constructions, unnecessary prepositional phrases, etc.) (GPS) (GSH2_D2011-35)
- produce narrative writing that applies polished narrative strategies acquired in previous grades to other genres of writing such as reflective compositions, historical investigative reports, and literary analyses, by raising the level of critical thinking skills and rhetorical techniques (GPS) (GSH2_D2011-36)
- produce expository (informational) writing to convey information and ideas from primary and secondary sources accurately and coherently (GPS) (GSH2_D2011-37)
- produce persuasive writing that structures ideas and arguments in a sustained and logical fashion (GPS) (GSH2_D2011-38)
- produce technical writing that clearly, logically, and purposefully applies technical writing strategies acquired in previous grades to other genres of writing and in a variety of writing situations such as expository compositions, historical investigative reports, and literary analyses, by raising the level of critical thinking skills and rhetorical techniques (GPS) (GSH2_D2011-39)
- use research and technology to support writing (GPS) (GSH2_D2011-40)
- practice both timed and process writing and, when applicable, use the writing process to develop, revise, and evaluate writing (GPS) (GSH2_D2011-41)

E - Conventions

- demonstrate understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats (GPS) (GSH2_E2011-42)
- use appropriate manuscript form, realizing that different forms of writing require different formats (GPS) (GSH2_E2011-43)

F - Accessing Information / Reference Skills

- select and narrow topic for research questions (GPS, HSGT) (GSH2_F2008-44)
- formulate appropriate research questions (GPS, HSGT) (GSH2_F2008-45)
- determine the adequacy and/or relevancy of information (GPS, HSGT) (GSH2_F2008-46)
- draw conclusions and make generalizations (GPS, HSGT) (GSH2_F2008-47)
- apply critical-thinking skills (GPS, HSGT) (GSH2_F2008-48)
- use and apply knowledge about maps (GPS, HSGT) (GSH2_F2008-49)
- evaluate long- and short-term goals to make visions a reality (GPS, HSGT) (GSH2_F2008-50)
- establish and effectively apply time management skills including schedules, organization, and recordkeeping (GPS, HSGT) (GSH2_F2008-51)
- analyze and apply proper study techniques (GPS, HSGT) (GSH2_F2008-52)

Humanities

G - Foundations of History (8000 BCE - 600 CE)

- identify the periodization in early human history along with the causes of change and examples of continuities associated with these time periods (WH) (GPS, HSGT) (GSH2_G2008-53)
- compare the basic features of culture, state, and social structure of the early civilizations (WH) (GPS, HSGT) (GSH2_G2008-54)

H - Post Classical Era (600-1450)

- discuss the emergence of new empires, political systems, continuities, changes, and political systems between 600 and 1450 C.E. (WH) (GPS, HSGT) (GSH2_H2008-55)
- discuss the development and shifts in interregional trade, technology, economic innovations, and cultural exchanges that took place between 600 and 1450 C.E. (WH) (GPS, HSGT) (GSH2_H2008-56)
- discuss the developments in arts, sciences, and technologies of East Asia, the Americas, Europe, Africa, and South Asia and Southeast Asia between 600 and 1450 C. E. (WH) (GPS, HSGT) (GSH2_H2008-57)
- discuss the growth and role of cities as commercial centers and administrative centers for Song China, Africa, and the Americas (WH) (GPS, HSGT) (GSH2_H2008-58)

I - Early Modern Era (1450-1750)

- discuss the political, social, and economic developments in the following: European nations, Aztec, Inca, Ottoman, China, Tokugawa, Mughal (WH/EH) (GPS, HSGT) (GSH2_I2008-59)
- discuss European war and civil conflict: origins, developments, technology, and their consequences (WH/EH) (GPS, HSGT) (GSH2_I2008-60)
- assess the evolution of political elites and the development of political parties, ideologies, and other forms of mass politics in Europe (EH) (GPS, HSGT) (GSH2_I2008-61)
- analyze changing definitions of and attitudes toward social groups, classes, races, and ethnicities within and outside Europe (WH/EH) (GPS, HSGT) (GSH2_I2008-62)
- explain the significance of the slave systems and slave trade between 1450 and 1750 from a world history perspective (WH) (GPS, HSGT) (GSH2_I2008-63)
- discuss intellectual and cultural developments of the Scientific Revolution and the Enlightenment (WH) (GPS, HSGT) (GSH2_I2008-64)
- examine developments in European literacy, education, and communication (EH) (GPS, HSGT) (GSH2_I2008-65)
- examine gender roles and its influence on work, social structure, family structure, and interest group formation in Europe (EH) (GPS, HSGT) (GSH2_I2008-66)
- discuss changes in trade, technology, and global interactions that took place between 1450 and 1750 and their impact on the individual countries (WH/EH) (GPS, HSGT) (GSH2_I2008-67)

J - Modern Era

- discuss the new political ideas that gave rise to the independence movements in the United States, Haiti, France, and Latin America (WH) (GPS, HSGT) (GSH2_J2008-68)
- discuss the economic, military, political, social, and cultural impact of western dominance during imperialism, colonialism, and neocolonialism during this period in the Ottoman Empire, Latin America, Africa, and Southeast Asia (WH) (GPS, HSGT) (GSH2_J2008-69)
- discuss the political, social, and economic thought, including but not limited to the following ideologies: socialism, liberalism, and nationalism (WH/EH) (GPS, HSGT) (GSH2_J2008-70)
- identify the scientific developments that contributed to the Industrial Revolution on societies in Europe and outside of Europe (WH/EH) (GPS, HSGT) (GSH2_J2008-71)
- discuss the extension and limitation of rights and liberties (personal, civic, economic, and political), and majority and minority political persecution in Europe (EH) (GPS, HSGT) (GSH2_J2008-72)
- explain how social and gender structure changed as a result of the Industrial Revolution, emancipation of serfs/slaves, new forms of labor systems, and differing work patterns on a world scale (WH) (GPS, HSGT) (GSH2_J2008-73)
- analyze changing definitions of and attitudes toward social groups, classes, races, and ethnicities within and outside Europe (WH/EH) (GPS, HSGT) (GSH2_J2008-74)

Humanities

J - Modern Era (*continued*)

- discuss the major artistic and cultural developments and exchanges (WH/EH) (GPS, HSGT) (GSH2_J2008-75)

K - Contemporary History

- distinguish between new patterns of nationalism that developed in this time period and the impact that nationalism had on internal and external affairs (WH/EH) (GPS, HSGT) (GSH2_K2008-76)
- analyze political and diplomatic relations between Europe and other parts of the world: imperialism, decolonization, and global interdependence (EH) (GPS, HSGT) (GSH2_K2008-77)
- analyze the role that global politics played as the causes, the chain of events, and the results of World Wars I and II and the Cold War (WH) (GPS, HSGT) (GSH2_K2008-78)
- discuss the extension and limitation of rights and liberties (personal, civic, economic, and political), and majority and minority political persecution in Europe (EH) (GPS, HSGT) (GSH2_K2008-79)
- identify the major artistic developments and exchanges (WH/EH) (GPS, HSGT) (GSH2_K2008-80)
- analyze changing definitions of and attitudes toward social groups, classes, races, and ethnicities within and outside Europe (WH/EH) (GPS, HSGT) (GSH2_K2008-81)
- assess the scientific and consumer culture that developed during this time period and the role they played in international relations (WH) (GPS, HSGT) (GSH2_K2008-82)

Humanities III

A - Listening, Speaking, and Viewing

- participate in student-to-teacher, student-to-student, and group verbal interactions (GPS) (GSH3_A2011-1)
- formulate reasoned judgments and respond effectively to written and oral communication (text and media [e.g., television, radio, film productions, and electronic media]) (GPS) (GSH3_A2011-2)
- deliver and respond to focused, coherent, and polished presentations in ways that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description (GPS) (GSH3_A2011-3)

B - Comprehension

- identify evidence (e.g., examples of diction, imagery, point of view, figurative language, symbolism, plot, and main ideas) in a variety of texts representative of different genres (e.g., poetry, prose [short story, novel, essay, editorial, biography], technical writing, satire, parody, and drama) and use this evidence as the basis for interpretation (GPS) (GSH3_B2011-4)
- identify, analyze, and apply knowledge of the structures and elements of American fiction and provide evidence from the text to support understanding (GPS) (GSH3_B2011-5)
- identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction and/or informational materials and provide evidence from the text to support understanding (GPS) (GSH3_B2011-6)
- identify and analyze elements of poetry from various periods of American literature and provide evidence from the text to support understanding (GPS) (GSH3_B2011-7)
- identify, analyze, and apply knowledge of the themes, structures, and elements of dramatic American literature and provide evidence from the text to support understanding (GPS) (GSH3_B2011-8)
- identify, analyze, and apply knowledge of theme in a work of American literature and provide evidence from the text to support understanding (GPS) (GSH3_B2011-9)
- identify themes and archetypes commonly found in American literature and compare and contrast these with themes and archetypes present in the literature of various other world cultures (GPS) (GSH3_B2011-10)
- identify and analyze the beliefs and values (e.g., origin beliefs, moral codes, gender concepts, romantic and familial relationships) represented in American literature, and compare and contrast these beliefs and values with those evident in the literature of various other world cultures (GPS) (GSH3_B2011-11)

Humanities

B – Comprehension (*continued*)

- identify and analyze the social, political, and historical factors that have led to differences in the content, style, and development of American and world literature (GPS) (GSH3_B2011-12)
- identify and apply criteria for distinguishing between poor, good, and great works of American and world literature (GPS) (GSH3_B2011-13)
- articulate differences in the artistic merit of various literary works using a precise vocabulary (e.g., classic, masterpiece, derivative, pulp, etc.) and present textual evidence to support aesthetic judgments (GPS) (GSH3_B2011-14)
- develop an ability to distinguish between merely popular works of literature and those that possess significant literary merit, and explain the differences in content and style that lead to such distinctions (GPS) (GSH3_B2011-15)
- evaluate quality of reading material and its content based on author's purpose, meaning, and structure (GPS) (GSH3_B2011-16)
- identify and analyze literary works by relating them to their contemporary context or historical background as well as to works from other time periods (GPS) (GSH3_B2011-17)
- relate a literary work to primary source documents of its literary period or historical setting (GPS) (GSH3_B2011-18)
- compare and contrast specific characteristics of different genres as they develop and change over time for different purposes (e.g., personal, meditative Colonial writing vs. public, political documents of the Revolutionary era, or replication of traditional European styles [Bradstreet, Taylor] vs. emerging distinctive American style [Dickinson, Whitman] in poetry) (GPS) (GSH3_B2011-19)
- analyze a variety of works representative of different genres within specific time periods in order to identify types of discourse (e.g., satire, parody, allegory) that cross the lines of genre classifications (GPS) (GSH3_B2011-20)
- employ a variety of writing genres to demonstrate a comprehensive grasp of significant ideas in selected literary works and compose essays, narratives, poems, or technical documents (GPS) (GSH3_B2011-21)
- acquire new vocabulary and use it correctly in reading and writing (GPS) (GSH3_B2011-22)

C - Reading Across the Curriculum

- read a minimum of 25 grade-level appropriate books or book equivalents (approximately 1,000,000 words) per year from a variety of content areas (both informational and fictional texts) in a variety of genres and modes of discourse including technical texts related to various content areas (GPS) (GSH3_C2011-23)
- use appropriate strategies to read and comprehend content-area texts (GPS) (GSH3_C2011-24)
- participate in discussions related to curricular learning in all content areas (GPS) (GSH3_C2011-25)
- acquire new vocabulary in each content area and use it correctly (GPS) (GSH3_C2011-26)
- establish a context for information acquired by reading across content areas (GPS) (GSH3_C2011-27)

D - Writing

- set a context for writing and engage the reader (GPS) (GSH3_D2011-28)
- establish a clear, distinctive, and coherent thesis, perspective, or controlling idea (GPS) (GSH3_D2011-29)
- maintain an appropriate and consistent tone and coherent focus throughout (GPS) (GSH3_D2011-30)
- select a focus, structure, and point of view relevant to the purpose, genre expectations, audience, length, and format requirements (GPS) (GSH3_D2011-31)
- construct arguable topic sentences, when applicable, to guide unified paragraphs (GPS) (GSH3_D2011-32)
- use precise language, action verbs, sensory details, appropriate modifiers, and active rather than passive voice (GPS) (GSH3_D2011-33)
- write texts of a length appropriate to address the topic or tell the story (GPS) (GSH3_D2011-34)
- use traditional structures for conveying information (e.g., chronological order, cause and effect, order of importance, spatial, similarity and difference, and posing and answering a question) (GPS) (GSH3_D2011-35)
- support statements and claims with anecdotes, descriptions, facts and statistics, and specific examples (GPS) (GSH3_D2011-36)
- use logical and effective transitions between ideas and paragraphs (GPS) (GSH3_D2011-37)
- attain appropriate closure (GPS) (GSH3_D2011-38)
- use language efficiently and economically, communicating maximum information with minimum waste (e.g., avoiding repetition, redundancy, wordy constructions, unnecessary prepositional phrases, etc.) (GPS) (GSH3_D2011-39)

Humanities

D – Writing (*continued*)

- produce narrative writing that applies polished narrative strategies acquired in previous grades, in other genres of writing such as reflective compositions, historical investigative reports, and literary analyses, by raising the level of critical thinking skills and rhetorical techniques (GPS) (GSH3_D2011-40)
- produce expository (informational) writing to explain an idea or concept and/or convey information and ideas from primary and secondary sources accurately and coherently (GPS) (GSH3_D2011-41)
- produce persuasive writing that clearly, logically, and purposefully applies persuasive writing strategies acquired in previous grades in other genres of writing and in a variety of writing situations such as expository compositions, historical investigative reports, and literary analyses by raising the level of critical thinking skills and rhetorical techniques and the sophistication of the language and style (GPS) (GSH3_D2011-42)
- produce technical writing that clearly, logically, and purposefully applies technical writing strategies acquired in previous grades in other genres of writing and in a variety of writing situations such as expository compositions, historical investigative reports, and literary analyses by raising the level of critical thinking skills and rhetorical techniques and the sophistication of the language and style (GPS) (GSH3_D2011-43)
- use research and technology to support writing (GPS) (GSH3_D2011-44)
- practice both timed and process writing and, when applicable, use the writing process to develop, revise, and evaluate writing (GPS) (GSH3_D2011-45)

E - Conventions

- demonstrate understanding and control of the rules of standard American English, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats (GPS) (GSH3_E2011-46)
- use appropriate manuscript form realizing that different forms of writing require different formats (GPS) (GSH3_E2011-47)

Humanities IV - Economics

A - Microeconomics

- analyze basic economic concepts (GSHE_A2010-1)
- discuss the nature and functions of product markets (GSHE_A2010-2)
- identify and differentiate factor markets to include derived factor demand, marginal revenue product, labor market and firms' hiring of labor, and market distribution of income (GSHE_A2010-3)
- analyze market failure and the role of government to include all of the following: externalities, public goods, public policy to promote competition, and income distributions (GSHE_A2010-4)

B - Macroeconomics

- analyze the measurement of economic performance to include national income accounts, circular flow, inflation measurement and adjustment, and unemployment (GSHE_B2010-5)
- compare and contrast national income and price determination including aggregate demand, aggregate supply, and macroeconomic equilibrium (GSHE_B2010-6)
- describe the impact of the financial sector on our economy (GSHE_B2010-7)
- analyze inflation, unemployment, and stabilization policies (GSHE_B2010-8)
- describe economic growth and productivity to include investment in human capital, physical capital, research and development, and technological progress (GSHE_B2010-9)
- compare and contrast open economy, international trade, and finance (GSHE_B2010-10)

Humanities IV - Literature and Composition

A - Listening, Speaking, and Viewing

- participate in student-to-teacher, student-to-student, and group verbal interactions (GPS) (GSHL_A2010-1)
- formulate reasoned judgments about written and oral communication (texts and media [e.g., television, radio, film productions, and electronic media]) (GPS) (GSHL_A2010-2)
- deliver and respond to focused, coherent, and polished presentations in ways that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description (GPS) (GSHL_A2010-3)

B - Comprehension

- identify evidence (e.g., examples of diction, imagery, point of view, figurative language, symbolism, plot events, and main ideas, and characteristics) in a variety of texts representative of different genres (e.g., poetry, prose [short story, novel, essay, editorial, biography, satire], technical writing, and drama) and use this evidence as the basis for interpretation (GPS) (GSHL_B2010-4)
- identify, analyze, and apply knowledge of the structures and elements of British and Commonwealth fiction and provide evidence from the text to support understanding (GPS) (GSHL_B2010-5)
- identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction and/or informational materials and provide evidence from the text to support understanding (GPS) (GSHL_B2010-6)
- identify and analyze elements of poetry from various periods of British literature and provide evidence from the text to support understanding (GPS) (GSHL_B2010-7)
- identify, analyze, and apply knowledge of the themes, structures, and elements of dramatic British and Commonwealth literature and provide evidence from the text to support understanding (GPS) (GSHL_B2010-8)
- identify, analyze, and apply knowledge of theme in a work of British and/or Commonwealth literature and provide evidence from the work to support understanding (GPS) (GSHL_B2010-9)
- identify themes and archetypes commonly found in British literature and compare and contrast these with themes and archetypes present in the literature of various other world cultures (GPS) (GSHL_B2010-10)
- identify and analyze the beliefs and values (e.g., origin beliefs, moral codes, gender concepts, romantic, and familiar relationships) represented in British literature, and compare and contrast these beliefs and values with those evident in the literature of various other world cultures (GPS) (GSHL_B2010-11)
- identify and analyze the social, political, and historical factors that have led to differences in the content, style, and development of British and world literature (GPS) (GSHL_B2010-12)
- identify and apply criteria for distinguishing between poor, good, and great works of British and world literature (GPS) (GSHL_B2010-13)
- develop an ability to distinguish between "merely popular" works of literature and those that possess "significant literary merit", and explain the differences in content and style that lead to such distinctions (GPS) (GSHL_B2010-14)
- evaluate quality of reading material and its content based on author's purpose, meaning, and structure (GSHL_B2010-15)
- relate literary works to their contemporary context or historical background as well as to works from other time periods (GPS) (GSHL_B2010-16)
- relate a literary work to primary source documents of its literary period or historical setting (GPS) (GSHL_B2010-17)
- compare and contrast specific characteristics of different genres as they develop and change over time for different purposes (e.g., heroic elegy, satirical essay, serial novel, etc.) (GPS) (GSHL_B2010-18)
- analyze a variety of works representative of different genres within specific time periods in order to identify types of discourse (e.g., satire, parody, allegory, romance, pastoral) that cross the lines of genre classifications (GPS) (GSHL_B2010-19)
- employ a variety of writing genres to demonstrate a comprehensive group of significant ideas in selected literary works and compose essays, narratives, poems, or technical documents (GPS) (GSHL_B2010-20)
- analyze inferences and conclusions (GSHL_B2010-21)
- follow written technical directions and procedures (GSHL_B2010-22)
- identify and analyze bias, slanted writing, and propaganda (GSHL_B2010-23)
- adjust reading rate to match purpose (e.g., skim, scan, and analyze) (GSHL_B2010-24)

Humanities

B - Comprehension (*continued*)

- acquire new vocabulary and use it correctly in reading and writing (GPS) (GSHL_B2010-25)

C - Reading Across the Curriculum

- read a minimum of 25 grade-level appropriate books or book equivalents (approximately 1,000,000 words) per year from a variety of content areas (both nonfiction and fictional texts in a variety of genres and modes of discourse), including technical texts related to various content areas (GPS) (GSHL_C2010-26)
- use appropriate strategies to read and comprehend content-area texts (GSHL_C2010-27)
- participate in discussions related to curricular learning in all content areas (GSHL_C2010-28)
- acquire new vocabulary in each content area and use it correctly (GPS) (GSHL_C2010-29)
- establish a context for information acquired by reading across content areas (GPS) (GSHL_C2010-30)

D - Writing

- set a context for writing and engage the reader (GPS) (GSHL_D2010-31)
- establish a clear, distinctive, and coherent thesis, perspective, or controlling idea (GPS) (GSHL_D2010-32)
- maintain an appropriate and consistent tone and coherent focus throughout (GPS) (GSHL_D2010-33)
- select a focus, structure, and point of view relevant to the purpose, genre expectations, audience, length, and format requirements (GPS) (GSHL_D2010-34)
- construct arguable topic sentences, when applicable, to guide unified paragraphs (GPS) (GSHL_D2010-35)
- use precise language, action verbs, sensory details, appropriate modifiers, and active rather than passive voice (GPS) (GSHL_D2010-36)
- use language efficiently and economically, communicating maximum information with minimum waste (e.g., avoiding repetition, redundancy, wordy constructions, unnecessary prepositional phrases, etc.) (GPS) (GSHL_D2010-37)
- write texts of a length appropriate to address the topic or tell the story (GPS) (GSHL_D2010-38)
- use traditional structures for conveying information (e.g., chronological order, cause and effect, order of importance, spatial, similarity and difference, and posing and answering a question) (GPS) (GSHL_D2010-39)
- support statements and claims with anecdotes, descriptions, facts and statistics, and specific examples (GPS) (GSHL_D2010-40)
- use logical and effective transitions between ideas and paragraphs (GSHL_D2010-41)
- attain appropriate closure (GPS) (GSHL_D2010-42)
- produce narrative writing that applies polished narrative strategies acquired in previous grades, in other genres of writing such as reflective compositions, historical investigative reports, and literary analyses, by raising the level of critical thinking skills and rhetorical techniques (GPS) (GSHL_D2010-43)
- produce expository (informational) writing to explain an idea or concept and/or convey information and ideas from primary and secondary sources accurately and coherently (GPS) (GSHL_D2010-44)
- produce persuasive writing that clearly, logically, and purposefully applies persuasive writing strategies acquired in previous grades in other genres of writing and in a variety of writing situations such as expository compositions, historical investigative reports, and literary analyses by raising the level of critical thinking skills and rhetorical techniques and the sophistication of the language and style (GPS) (GSHL_D2010-45)
- produce technical writing that clearly, logically, and purposefully applies technical writing strategies acquired in previous grades in other genres of writing and in a variety of writing situations such as expository compositions, historical investigative reports, and literary analyses by raising the level of critical thinking skills and rhetorical techniques and the sophistication of the language and style (GPS) (GSHL_D2010-46)
- use research and technology to support writing (GPS) (GSHL_D2010-47)
- practice both timed and process writing and, when applicable, use the writing process to develop, revise, and evaluate writing (GPS) (GSHL_D2010-48)

E - Conventions

- demonstrate understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats (GPS) (GSHL_E2010-49)

E – Conventions (*continued*)

- demonstrate understanding of manuscript form, realizing that different forms of writing require different formats (GPS) (GSHL_E2010-50)

Humanities IV - Political Systems / American Government

A - Constitutional Underpinnings of United States Government

- describe significant connections between key events in English and colonial history and the growth of American representative democracy culminating in the Declaration of Independence, the Articles of confederation, and the Constitutional Convention (GSHP_A2010-1)
- compare and contrast the Articles of Confederation and the Constitution (GSHP_A2010-2)
- analyze and discuss Federalist 51 - Separation of Powers (GSHP_A2010-3)
- demonstrate knowledge of the fundamental principles of the Constitution to include judicial review, separation of powers, checks and balances, limited power of the government, popular sovereignty, and federalism (GSHP_A2010-4)
- analyze and discuss Marbury v. Madison and McCulloch v. Maryland cases (GSHP_A2010-5)

B - Introduction to Comparative Politics

- explain the purpose and methods of comparison and the classification of government and political systems (GSHP_B2010-6)
- identify and differentiate the concepts of state, nation, nation-state, regime, and government (GSHP_B2010-7)
- describe the purpose of government according to the views of political scientists (GSHP_B2010-8)
- introduce the six nations to be compared, briefly examining their histories (United Kingdom, Mexico, Russian Federation, China, Iran, and Nigeria) (GSHP_B2010-9)

C - Political Beliefs and Behaviors

- examine the American pluralistic society (GSHP_C2010-10)
- discuss the beliefs of liberals, moderates, and conservatives (GSHP_C2010-11)
- analyze the Down's model (GSHP_C2010-12)
- examine the socioeconomic factors of voters (GSHP_C2010-13)

D - Sovereignty, Authority, and Power

- apply the concepts of culture, communication, and political socialization to the six nations (GSHP_D2010-14)
- discuss supranational governance including the EU, NAFTA, and the UN (GSHP_D2010-15)
- compare the sources of power in nations (GSHP_D2010-16)
- identify regime types and economic systems (GSHP_D2010-17)
- analyze state/nation, building, legitimacy, and stability (GSHP_D2010-18)
- describe how belief systems become sources of legitimacy; consider ideologies such as classical liberalism, communism, socialism, and fascism (GSHP_D2010-19)

E - Political Parties, Interest Groups, and Mass Media

- investigate the development of political parties in American politics to include the Federalists and Anti-Federalists (GSHP_E2010-20)
- describe the decentralization of political parties in America to reflect the federal structure (local, state, and national political affiliations) (GSHP_E2010-21)
- examine the role of special interest groups in American democracy (GSHP_E2010-22)
- analyze the growing impact of the media in developing public opinion (GSHP_E2010-23)
- analyze and discuss Federalist 10 - Political Factions (GSHP_E2010-24)
- describe significant political parties in the six nations, their organization, membership, and ideological positions on the political spectrum (GSHP_E2010-25)

E - Political Parties, Interest Groups, and Mass Media (continued)

- explain party leadership and recruitment of future leaders (GSHP_E2010-26)
- analyze the interest group systems of the six nations, their sense of political efficacy, and their historical and current impacts (GSHP_E2010-27)

F - Citizens, Society, and the State

- examine social cleavages: ethnic, racial, class, gender, religious, and regional (GSHP_F2010-28)
- analyze the concept of civil society in the six nations (GSHP_F2010-29)
- compare and contrast the influence of the media, both national and international (GSHP_F2010-30)
- examine political participation with regard to forms, modes, and trends including the use of violence (GSHP_F2010-31)
- analyze significant social movements (GSHP_F2010-32)

G - Institutions of National Government: Congress, Presidency, Bureaucracy, and Federal Courts

- explain the organization of the legislative branch to include bicameralism, qualifications, powers, and function (GSHP_G2010-33)
- analyze and discuss Gibbons v. Ogden, Heart of Atlanta Motel, and U.S. v. Lopez cases and the commerce clause (GSHP_G2010-34)
- explain the formation of congressional districts by the state legislature (GSHP_G2010-35)
- examine the importance of congressional committees in the lawmaking process (GSHP_G2010-36)
- explain the organization of the executive branch to include the president and vice president (GSHP_G2010-37)
- examine and analyze the Twenty-fifth (25th) Amendment (presidential disability and vice presidential vacancies (GSHP_G2010-38)
- analyze executive powers in foreign and domestic affairs to include budget making, treaties, appointments, lawmaking (GSHP_G2010-39)
- examine the War Powers Resolution, Pork Barrel legislation, and the Line-Item Veto (GSHP_G2010-40)
- examine the various roles of the President (Commander in Chief, Chief Executive, Chief Diplomat, Chief Administrator, etc.) (GSHP_G2010-41)
- analyze and discuss U.S. v. Nixon case and the impeachment process (GSHP_G2010-42)
- research the Executive Office of the President (EOP) (GSHP_G2010-43)
- examine the organization and creation of the Executive branch to include the cabinet and various independent agencies (include OMB, NSC, White House staff, SEC, FEDs, etc.) (GSHP_G2010-44)
- analyze the organization of the federal court system to include the Supreme Court, the Federal Courts of Appeal, the District Courts, and other specialty courts (GSHP_G2010-45)
- examine the role and responsibilities of the Chief Justice of the Supreme Court (GSHP_G2010-46)
- analyze and discuss Federalist 78 - Federal Courts (GSHP_G2010-47)

H - Comparative Political Institutions

- describe levels of governments (supranational, national, regional, and local) (GSHP_H2010-48)
- differentiate between unitary and federal systems, examining centralization and decentralization (GSHP_H2010-49)
- explain the roles of Executives in the six nations (single or dual, president, prime minister, military leader, and party secretary) (GSHP_H2010-50)
- examine different types of legislatures including unicameral and bicameral (GSHP_H2010-51)
- compare and contrast parliamentary and presidential systems (GSHP_H2010-52)
- analyze elections and electoral systems including the concepts of "first past the post", proportional representation, communist elections, and single member districts (GSHP_H2010-53)
- discuss the significance and roles of bureaucracies (GSHP_H2010-54)
- examine the role and importance of the military in government (GSHP_H2010-55)
- describe the judicial systems, their degrees of autonomy, the presence or absence of judicial review, and types of courts (GSHP_H2010-56)

Humanities

I - Public Policy

- analyze, discuss, and examine the iron triangle and its impact in policy-making (GSHP_I2010-57)
- examine the role of institutions in the enactment of policy (GSHP_I2010-58)
- examine the role of the bureaucracy and the courts in policy implementation and interpretation (GSHP_I2010-59)
- discuss and link the following in the policy-making process: political institutions, political parties, interest groups, public opinion, and elections (GSHP_I2010-60)
- compare and contrast common policy issues such as economic performance, social welfare programs, civil liberties, freedom, population and migration, the environment, and economic developments (GSHP_I2010-61)
- examine domestic and international factors that influence policymaking and implementation (GSHP_I2010-62)

J - Civil Rights and Civil Liberties

- examine the Civil Rights Act of 1964 and the Voting Rights Act of 1965 (GSHP_J2010-63)
- analyze the impact of the Bill of Rights and the Fourteenth Amendment on state and national governments (GSHP_J2010-64)
- discuss the rights of the accused to include *Miranda v. Arizona*, *Escobedo v. Illinois*, and *Gideon v. Wainwright* (GSHP_J2010-65)
- examine the First Amendment to the Constitution to include *Engel v. Vitale*, *West Virginia Board of Education v. Barnette*, *Texas v. Johnson*, and *Schenck v. U.S.* (GSHP_J2010-66)
- examine the development of civil liberties and civil rights by judicial interpretation to include *Brown v. Board of Education of Topeka, Kansas*, *Roe v. Wade*, and *Plessy v. Ferguson* (GSHP_J2010-67)

K - Political and Economic Change

- examine revolutions, coup attempts, and wars
- describe trends and types of political change, the extent of democratization, and economic privatization (GSHP_K2010-68)
- analyze the relationship between political and economic change in nations (GSHP_K2010-69)
- describe globalization and fragmentation, interlinked economies, global culture, and regionalism (GSHP_K2010-70)
- compare and contrast the six nations' approach to development (GSHP_K2010-71)

Fine Arts - Chorale

A - Skills and Techniques/Performance

- sing, alone and with others, a varied repertoire of music (GPS) (GSCH_A2011-1)
- perform on instruments, alone and with others, a varied repertoire of music (GPS) (GSCH_A2011-2)
- read and notate music (GPS) (GSCH_A2011-3)

B - Creation

- improvise melodies, variations, and accompaniments (GPS) (GSCH_B2011-4)
- compose and arrange music within specified guidelines (GPS) (GSCH_B2011-5)

C - Critical Analysis/Investigation

- listen to, analyze, and describe music (GPS) (GSCH_C2011-6)
- evaluate music, music rehearsals, and music performances (GPS) (GSCH_C2011-7)

D - Cultural and Historical Context

- understand relationships between music, the other arts, and disciplines outside the arts (GPS) (GSCH_D2011-8)
- understand music in relation to culture and history (GPS) (GSCH_D2011-9)

Fine Arts - Music - Introduction to Music Technology

A - Computer Basics

- define the relationship of a computer to musical technology (GSMI_A2008-1)
- explain and summarize the history of computers in the context of music (GSMI_A2008-2)
- define relevant computer-related terms associated with musical technology (GSMI_A2008-3)
- recognize ethical and legal issues related to the use of computers (GSMI_A2008-4)
- practice proper use and care of computer equipment and media (GSMI_A2008-5)

B - MIDI Applications

- describe concepts of MIDI, MIDI-channels, and MIDI files (GSMI_B2008-6)
- employ basic terms, such as multi-timbral, polyphony, and general MIDI as they apply to the electronic keyboard (synthesizer) (GSMI_B2008-7)
- describe and be able to troubleshoot MIDI workstation connections (GSMI_B2008-8)
- reset MIDI setups within computer operation systems (GSMI_B2008-9)

C - MIDI Sequencing Software

- explain the basic operation of sequencing software (GSMI_C2008-10)
- apply various editing features using sequencing software (GSMI_C2008-11)
- create a multi-track sequence utilizing different channels or sounds (GSMI_C2008-12)

D - Intelligent Accompaniment Software

- explain the basic operation of intelligent accompaniment software (GSMI_D2008-13)
- apply various editing features, such as changing styles and tempos (GSMI_D2008-14)
- create a musical composition using intelligent accompaniment software (GSMI_D2008-15)

E - Notation Software

- explain the basic operation of notation software (GSMI_E2008-16)
- apply various editing features, such as changing clefs, time, and key signature (GSMI_E2008-17)
- apply page layout features including measure spacing, systems, per page, and staff size (GSMI_E2008-18)
- create a short composition using a single staff (GSMI_E2008-19)

Fine Arts - Music - Intermediate Music Technology

A - Computer Basics

- describe computer requirements needed to equip a music workstation (GSIM_A2008-1)
- establish proper backup procedures for data (GSIM_A2008-2)
- utilize a MIDI workstation for use with sequencing and notation software (GSIM_A2008-3)

B - MIDI Applications

- compare and contrast MIDI keyboards with MIDI controllers (GSIM_B2008-4)
- construct MIDI workstation scenarios with multiple MIDI keyboards and modules (GSIM_B2008-5)
- describe how alternative MIDI controllers work (GSIM_B2008-6)
- describe concepts of MIDI, MIDI-channels, and MIDI files (GSIM_B2008-7)
- employ basic terms, such as multi-timbral, polyphony, and general MIDI as they apply to the electronic keyboard (synthesizer) (GSIM_B2008-8)
- import and export MIDI files from sequencing and notation software (GSIM_B2008-9)
- apply program sounds other than general MIDI in sequences (GSIM_B2008-10)
- employ the use of various drum kits other than the standard general MIDI drum kit (GSIM_B2008-11)

C - MIDI Sequencing Software

- import and edit MIDI files downloaded from the Internet with sequencing software (GSIM_C2008-12)
- apply patch changes to occur within a sequence (GSIM_C2008-13)
- demonstrate knowledge of the basic operation of sequencing software (GSIM_C2008-14)
- apply various editing features using sequencing software (GSIM_C2008-15)
- create a multi-track sequence utilizing different channels or sounds (GSIM_C2008-16)
- apply concepts of quantizing drum and other instrument tracks (GSIM_C2008-17)

C - MIDI Sequencing Software (*continued*)

- apply various editing features, such as changing tempo, velocity, and pitch (GSIM_C2008-18)
- modify a multi-track sequence utilizing various tools in the step editor (GSIM_C2008-19)

D - Loop Based and Virtual Instrument Software

- create a multi-track sequence utilizing loop-based software (GSIM_D2008-20)
- manipulate loops to create a song that contains a 12-bar blues musical form (GSIM_D2008-21)
- customize rhythms of the drum editor to create a unique drum beat (GSIM_D2008-22)

E - Notation Software

- demonstrate knowledge of notation techniques for transposing instruments (GSIM_E2008-23)
- demonstrate step- and real-time input into notation software (GSIM_E2008-24)
- explain chord symbols for augmented, diminished, and seventh chords (GSIM_E2008-25)
- create a lead sheet composition with lyrics, chord symbols, and a melody line (GSIM_E2008-26)

F - Music Composition

- create a multi-track sequence of background music for a specific setting, such as movie/TV score and computer game (CE) (GSIM_F2008-27)
- analyze formal elements of a variety of musical examples (GSIM_F2008-28)
- create a multi-track sequence of musical form utilizing an introduction, main theme, and ending (CE) (GSIM_F2008-29)

Fine Arts - Music - Advanced Music Technology

A - Computer Basics

- recognize and demonstrate the usage of external hard drives for digital recording and data storage (GSMT_A2008-1)
- display proper file management and organization of music compositions and related work (GSMT_A2008-2)
- utilize a digital audio workstation to facilitate sequencing and recording (GSMT_A2008-3)
- demonstrate creating audio CD's from sequencing and loop-based software (GSMT_A2008-4)

B - Tutorial and Computer Assisted Instruction (CAI) software

- describe and evaluate the different types of CAI software and explain their function (GSMT_B2008-5)
- categorize age-appropriate tutorial software for music instruction (GSMT_B2008-6)

C - MIDI Sequencing Software

- apply plug-ins to modify sounds (GSMT_C2008-7)
- recognize how virtual instrument sounds are used in sequencing (GSMT_C2008-8)
- use digital sequencing software to construct edited versions of music (GSMT_C2008-9)
- compose a short composition with GM instruments to upload on a web site (GSMT_C2008-10)
- create a composition using sequencing and digital audio tracks (GSMT_C2008-11)

D - Loop Based and Virtual Instrument Software

- use software to route virtual instrument sounds to sequencing software (GSMT_D2008-12)
- discuss features of virtual instruments (GSMT_D2008-13)
- identify computer requirements for using virtual instruments (GSMT_D2008-14)
- create a loop-based composition to export into sequencing software (GSMT_D2008-15)

E - Notation Software

- demonstrate multiple note input methods (GSMT_E2008-16)
- apply advanced musical expressions such as crescendos, dynamics, and repeat endings (GSMT_E2008-17)
- identify and apply musical directions such as D.S., D.C., and al Coda (GSMT_E2008-18)
- compose a short composition for a small ensemble such as a brass or woodwind quintet or string quartet (GSMT_E2008-19)

F - Music Composition

- compose appropriate musical cues to a film excerpt (GSMT_F2008-20)
- synchronize music to an original film excerpt and merge into a QuickTime movie (GSMT_F2008-21)
- demonstrate proper selection and setup for microphones in a recording session (GSMT_F2008-22)
- apply proper recording techniques using digital audio software (GSMT_F2008-23)
- use digital plug-ins and explain their effect on recording software (GSMT_F2008-24)

G - Music Industry

- identify careers associated with the musical industry (producer, engineer, manager) (CE) (GSMT_G2008-25)
- identify terms associated with the musical industry, such as digital/analog recording (GSMT_G2008-26)

Fine Arts - Visual Arts - Architectural Design

A - Creation and Performance

- employ creative solutions to produce architectural drawings and models using traditional and digital media (QCC) (GSAD_A2008-1)
- apply knowledge of elements of art and principles of design in creating architectural spaces (GSAD_A2008-2)
- display work habits and craftsmanship appropriate to the processes and specialized equipment being used (QCC) (GSAD_A2008-3)
- make independent decisions and evaluative judgments during the creative process and in resolution of design problems (QCC) (GSAD_A2008-4)
- work both individually and collaboratively to solve spatial design problems (QCC) (GSAD_A2008-5)
- demonstrate and apply knowledge of relevant graphic software programs (GSAD_A2008-6)

B - Perception and Analysis

- recognize and identify a variety of structural support systems and basic building construction techniques (GSAD_B2008-7)
- use specialized architectural design vocabulary to critically analyze and evaluate artwork and relate knowledge of frequently used processes and equipment (GSAD_B2008-8)
- use specialized architectural design vocabulary to research, analyze, and write about works of art and artists (GSAD_B2008-9)
- explore the relationship between architectural design and other disciplines (GSAD_B2008-10)
- discuss aesthetic issues related to architecture (GSAD_B2008-11)
- select, present, and display architectural projects in an aesthetically appealing manner (GSAD_B2008-12)

C - Cultural and Historical Context

- explore contemporary and historical developments related to architectural and environmental design (GSAD_C2008-13)
- describe and analyze distinguishing characteristics of the architectural and environmental creations of various architects, periods, and styles (GSAD_C2008-14)
- describe and analyze career opportunities related to architecture including landscape architecture, interior design, and industrial design (GSAD_C2008-15)

Fine Arts - Visual Arts - Commercial Photography III - Digital Photography

A - Creation and Performance

- employ creative solutions in producing digital photographs using a variety of approaches to composition and subject matter (QCC) (GSCP_A2008-1)
- apply knowledge of elements of art and principles of design in creating digital photographic artworks (QCC) (GSCP_A2008-2)
- develop work habits and craftsmanship appropriate to the photographic process and specialized equipment being used (QCC, CE) (GSCP_A2008-3)
- make independent decisions and evaluate judgments during creative process and in resolution of specific digital photographic design problems (QCC, CE) (GSCP_A2008-4)
- use photographic technology to organize and convey thematic content, ideas, feelings, or moods (QCC) (GSCP_A2008-5)
- demonstrate the operation of various digital cameras (QCC) (GSCP_A2008-6)
- manipulate images for publication within a photo-imaging program (QCC) (GSCP_A2008-7)
- create and produce images for publications from self-generated artwork/photographs using a flatbed scanner (QCC) (GSCP_A2008-8)
- create and produce images for publications from a digital still camera using a photo-imaging program (QCC) (GSCP_A2008-9)
- set up a fully equipped studio to make portraits using digital equipment (QCC) (GSCP_A2008-10)

Fine Arts

B - Perception and Analysis

- use specialized digital photography vocabulary to relate knowledge of frequently used processes and equipment (QCC) (GSCP_B2008-11)
- use specialized digital photography vocabulary to research, analyze, and write about works of art and artists (QCC) (GSCP_B2008-12)
- recognize and identify various visual forms created using photographic media (QCC) (GSCP_B2008-13)
- explore relationships between digital photography and other disciplines (QCC) (GSCP_B2008-14)
- discuss aesthetic issues related to digital photographic design (QCC) (GSCP_B2008-15)
- select, present, and display digital images in an aesthetically appealing manner (QCC) (GSCP_B2008-16)

C - Cultural and Historical Contexts

- discuss contemporary and historical developments in photography and digital photography (QCC) (GSCP_C2008-17)
- describe and analyze characteristics of digital photographs (QCC) (GSCP_C2008-18)
- describe and analyze career opportunities related to photo-imaging and digital photography (QCC) (GSCP_C2008-19)

Fine Arts - Visual Arts - Drawing and Painting

A - Creation and Performance

- use traditional and digital drawing and painting media, techniques, and equipment to solve visual art problems (QCC) (GSDP_A2008-1)
- apply knowledge of elements of art and principles of design in creating drawings and paintings (QCC) (GSDP_A2008-2)
- develop work habits and craftsmanship appropriate to media and equipment being used (QCC, CE) (GSDP_A2008-3)
- make independent decisions and evaluative judgments during the creative process and in resolution-specific drawing and/or painting problems (QCC, CE) (GSDP_A2008-4)
- use a variety of drawing and painting tools and skills to organize and convey ideas, feelings, and moods (QCC) (GSDP_A2008-5)
- demonstrate and apply knowledge of relevant graphic software programs (GSDP_A2008-6)

B - Perception and Analysis

- use specialized drawing and painting vocabulary to relate knowledge of frequently used processes and equipment (QCC) (GSDP_B2008-7)
- use specialized drawing and painting vocabulary to research, analyze, and write about works of art and artists (QCC) (GSDP_B2008-8)
- recognize and identify traditional and digital drawing and painting media (QCC) (GSDP_B2008-9)
- explore relationships between visual arts and other disciplines (QCC) (GSDP_B2008-10)
- discuss aesthetic issues related to drawing and painting (QCC) (GSDP_B2008-11)

C - Cultural and Historical Context

- explore contemporary and historical developments related to drawing and painting (QCC) (GSDP_C2008-12)
- describe and analyze characteristics of drawings and paintings of various artists, periods, and styles (QCC) (GSDP_C2008-13)
- describe and analyze careers related to art in business and industry, especially those related to the disciplines of drawing and painting (QCC, CE) (GSDP_C2008-14)

Fine Arts - Visual Arts - Graphic Design

A - Creation and Performance

- select and use a variety of media, techniques, and equipment to solve graphic design problems (QCC) (GSGD_A2008-1)
- apply knowledge of elements of art and principles of design to create graphic designs and computer art (QCC) (GSGD_A2008-2)
- develop work habits and craftsmanship appropriate to media and equipment being used (QCC, CE) (GSGD_A2008-3)
- make independent decisions and evaluative judgments during the creative process and in resolution of specific graphic design and computer art problems (QCC, CE) (GSGD_A2008-4)
- employ a variety of graphic design tools and skills to organize and convey ideas, emotions, and moods (QCC) (GSGD_A2008-5)
- produce graphic design layouts that combine image and type to communicate effectively to specific audience (GSGD_A2008-6)
- use appropriate research skills and techniques relevant to graphic design and computer art (GSGD_A2008-7)

B - Perception and Analysis

- use specialized graphic design and computer art vocabulary to critically analyze and evaluate artworks and relate knowledge of frequently used processes and equipment (QCC) (GSGD_B2008-8)
- recognize and identify a variety of media related to graphic design and computer art (QCC) (GSGD_B2008-9)
- explore the relationship between graphic design, computer art, and other disciplines (QCC) (GSGD_B2008-10)
- discuss aesthetic issues related to graphic design and computer art (QCC) (GSGD_B2008-11)
- select, present, and display graphic design and computer art projects in an aesthetically appealing manner (QCC) (GSGD_B2008-12)

C - Cultural and Historical Context

- explore contemporary and historical developments related to graphic design (QCC) (GSGD_C2008-13)
- describe and analyze characteristics of graphic designs of various artists, periods, and styles (QCC) (GSGD_C2008-14)
- describe and analyze career opportunities in graphic design (QCC, CE) (GSGD_C2008-15)

Fine Arts - Visual Arts - Pottery and Sculpture

A - Creation and Performance

- employ creative solutions in producing clay forms and pottery using a variety of construction methods and surface treatments (QCC, CE) (GSPS_A2008-1)
- use a variety of sculpture media, techniques, and equipment to solve visual art problems (QCC) (GSPS_A2008-2)
- apply knowledge of elements of art and principles of design in creating clay and sculptural forms (QCC) (GSPS_A2008-3)
- display work habits and craftsmanship appropriate to media and equipment being used (QCC, CE) (GSPS_A2008-4)
- make independent decisions and evaluative judgments during creative process and in resolution of specific pottery and sculptural design problems (QCC, CE) (GSPS_A2008-5)
- use clay construction techniques and sculptural media to organize and convey thematic content, ideas, feelings, or moods (QCC) (GSPS_A2008-6)
- explore the wheel-thrown method of pottery creation (QCC) (GSPS_A2008-7)
- demonstrate and apply knowledge of relevant graphics software programs (QCC) (GSPS_A2008-8)

B - Perception and Analysis

- use specialized ceramics and pottery vocabulary to relate knowledge of frequently used processes and equipment (QCC) (GSPS_B2008-9)
- use specialized ceramics and pottery vocabulary to research, analyze, and write about works of art and artists (QCC) (GSPS_B2008-10)
- recognize and identify a variety of sculptural media and pottery construction, decoration, and firing techniques (QCC) (GSPS_B2008-11)

Fine Arts

B - Perception and Analysis (*continued*)

- analyze pottery form and its relationship to function (QCC) (GSPS_B2008-12)
- explore the relationships of basic chemical processes and glazes, various firing processes, and chemical changes during those processes (QCC) (GSPS_B2008-13)
- explore relationships between pottery, sculpture, and other disciplines (QCC) (GSPS_B2008-14)
- discuss aesthetic issues related to pottery and sculpture (QCC) (GSPS_B2008-15)
- select, present, and display pottery and sculpture projects in an aesthetically appealing manner (QCC) (GSPS_B2008-16)

C - Cultural and Historical Context

- explore contemporary and historical developments in the clay and sculpture media (QCC) (GSPS_C2008-17)
- describe and analyze distinguishing characteristics of clay forms, pottery, and sculpture of various artists and styles (QCC) (GSPS_C2008-18)
- describe and analyze careers related to art in business and industry, especially those related to the disciplines of pottery and sculpture (QCC, CE) (GSPS_C2008-19)

Fine Arts - Honors Chorale

A - Skills and Techniques/Performance

- sing, alone and with others, a varied repertoire of music (GPS) (GSHC_A2011-1)
- perform on instruments, alone and with others, a varied repertoire of music (GPS) (GSHC_A2011-2)
- read and notate music (GPS) (GSHC_A2011-3)

B - Creation

- improvise melodies, variations, and accompaniments (GPS) (GSHC_B2011-4)
- compose and arrange music within specified guidelines (GPS) (GSHC_B2011-5)

C - Critical Analysis/Investigation

- listen to, analyze, and describe music (GPS) (GSHC_C2011-6)
- evaluate music, music rehearsals, and music performances (GPS) (GSHC_C2011-7)

D - Cultural and Historical Context

- understand relationships between music, the other arts, and disciplines outside the arts (GPS) (GSHC_D2011-8)
- understand music in relation to culture and history (GPS) (GSHC_D2011-9)

Fine Arts - Classical Piano and Guitar

A - Performance

- sight read at an expected competency level (GPS) (GSPG_A2007-1)
- use correct fingering, posture, and arm motion (GPS) (GSPG_A2007-2)
- tune the guitar correctly (GPS) (GSPG_A2007-3)
- perform appropriate scales, arpeggios, and chord progressions (GPS) (GSPG_A2007-4)
- perform class repertoire to an expected competency level (GPS) (GSPG_A2007-5)
- perform individually and as part of an ensemble (GPS) (GSPG_A2007-6)
- use musical vocabulary necessary to study, rehearse, and perform (GPS) (GSPG_A2007-7)

Fine Arts

B - Theory

- recognize the tonality of music from notation (GPS) (GSPG_B2007-8)
- recognize choral structures in music (GPS) (GSPG_B2007-9)
- recognize and explain symbols and terms used in music (GPS) (GSPG_B2007-10)

C - Appreciation

- develop critical listening skills (GPS) (GSPG_C2007-11)
- recognize genres and historical periods (GPS) (GSPG_C2007-12)
- distinguish various keyboard and guitar instruments aurally (GPS) (GSPG_C2007-13)
- use various media to locate related information about composers (GPS) (GSPG_C2007-14)

D - Technology

- import a standard MIDI file into a sequencer or notation program (GPS) (GSPG_D2007-15)
- compose a melody using a notation program (GPS) (GSPG_D2007-16)

E - Cultural and Historical Context

- describe and analyze a variety of careers and explore avocational and vocational possibilities related to music (GPS) (GSPG_E2007-17)

Fine Arts - Foundations in Studio Art

A - Creation and Performance

- develop creative solutions to design problems using a variety of media and techniques (GPS) (GSSA_A2007-1)
- apply knowledge of elements of art and principles of design as they relate to works of art (GPS) (GSSA_A2007-2)
- display work habits and craftsmanship appropriate to the media and equipment being used (GPS) (GSSA_A2007-3)
- make independent decisions and evaluative judgments during the creative process and in resolution of specific 2-D and 3-D design problems (GPS) (GSSA_A2007-4)

B - Perception and Analysis

- use specialized design vocabulary to critically analyze and evaluate artworks and to relate knowledge of frequently used processes and equipment (GPS) (GSSA_B2007-5)
- identify a variety of 2-D and 3-D design media (GPS) (GSSA_B2007-6)
- explore relationships between design and other disciplines (GPS) (GSSA_B2007-7)
- discuss aesthetic issues related to 2-D and 3-D design (GPS) (GSSA_B2007-8)
- select, present, and display 2-D and 3-D art in an aesthetically appealing manner (GPS) (GSSA_B2007-9)

C - Cultural and Historical Context

- explore contemporary and historical developments related to design (GPS) (GSSA_C2007-10)
- describe and analyze career opportunities in visual art (GPS) (GSSA_C2007-11)
- describe and analyze a variety of careers and explore avocational and vocational possibilities related to studio art (GPS) (GSSA_C2007-12)

Fine Arts - Music Composition and Technology

A - Theory

- identify major and minor key signatures (GPS) (GSMC_A2007-1)
- identify treble and bass clefs (GPS) (GSMC_A2007-2)
- identify and write conventional rhythm and metric notations (GPS) (GSMC_A2007-3)
- identify cadences, nonharmonic tones, and musical textures (GPS) (GSMC_A2007-4)
- employ tempo and dynamic terms in composition (GPS) (GSMC_A2007-5)
- recognize rhythmic patterns (GPS) (GSMC_A2007-6)
- identify music terminology and icons (GPS) (GSMC_A2007-7)
- identify major and minor scales and chords (GPS) (GSMC_A2007-8)

B - Composition

- write conventional rhythmic and melodic examples (GPS) (GSMC_B2007-9)
- employ tempo and dynamic terms in a composition (GPS) (GSMC_B2007-10)
- create a short musical composition using a single staff (GPS) (GSMC_B2007-11)
- create harmonies for simple melodies (GPS) (GSMC_B2007-12)
- compose musical compositions for various performing ensembles (GPS) (GSMC_B2007-13)
- compose musical compositions using various 20th Century-style techniques (GPS) (GSMC_B2007-14)

C - Music Technology

- input a composition into notational software (GPS) (GSMC_C2007-15)
- print parts from a composition using notational software (GPS) (GSMC_C2007-16)
- create a multi-track sequence of musical form utilizing an introduction, main theme, and ending (GPS) (GSMC_C2007-17)
- discuss concepts of MIDI, MIDI channels, and standard MIDI files (GPS) (GSMC_C2007-18)
- explain the function of general MIDI, polyphony, and multi-timbre as they apply to an electronic keyboard (GPS) (GSMC_C2007-19)
- assign sounds to different MIDI channels including various drum kits (GPS) (GSMC_C2007-20)
- describe the basic operation of notation software (GPS) (GSMC_C2007-21)
- apply various features such as changing clefs, time, and key signature (GPS) (GSMC_C2007-22)
- edit tracks utilizing copy and paste of measures and staves (GPS) (GSMC_C2007-23)
- apply page layout features including title, composer, and staff name (GPS) (GSMC_C2007-24)
- apply various editing features including articulations, slurs, and dynamics (GPS) (GSMC_C2007-25)
- create a short musical composition using a single staff (GPS) (GSMC_C2007-26)
- discuss the basic operation of sequencing software (GPS) (GSMC_C2007-27)
- demonstrate the function and tools of step/graphic editing window (GPS) (GSMC_C2007-28)
- explain the process of quantifying drum and other instrument tracks (GPS) (GSMC_C2007-29)
- edit tracks utilizing copy and paste of tracks, measures, and MIDI events (GPS) (GSMC_C2007-30)
- utilize concepts of editing by applying various tempo features (GPS) (GSMC_C2007-31)
- demonstrate concepts of record features including overdub and punch in/out (GPS) (GSMC_C2007-32)
- mix tracks including adjusting volume levels, pan, and equalization (GPS) (GSMC_C2007-33)
- mix tracks including automation of volume and pan (GPS) (GSMC_C2007-34)

D - Cultural and Historical Context

- describe and analyze a variety of careers and explore avocational and vocational possibilities related to music (GPS) (GSMC_D2007-35)

Fine Arts - String Symphony Orchestra

A - Individual Performance Skills

- perform, with expression and technical accuracy, a varied repertoire of music on instrument(s) (GPS) (GSSS_A2007-1)
- improvise melodies, variations, and accompaniments (GPS) (GSSS_A2007-2)
- sight read, accurately and expressively, music with a difficulty level of three (GPS) (GSSS_A2007-3)

B - Ensemble Performance Skills

- perform, on instrument(s) with others, a varied repertoire of music with expression and technical accuracy with a difficulty level of four (GPS) (GSSS_B2007-4)

C - Music Theory

- compose and arrange music in several distinct styles, demonstrating creativity in using the elements of music (GPS) (GSSS_C2007-5)
- transcribe existing pieces into other mediums for performance (GPS) (GSSS_C2007-6)
- read and notate music in an instrumental score of up to four staves (GPS) (GSSS_C2007-7)
- describe the uses of the elements of music and compositional devices and techniques represented by examples of comparative and contrasting works of music (GPS) (GSSS_C2007-8)
- evaluate music and music performances by evolving a criteria to make informed, critical evaluations of the quality and effectiveness of performances, compositions, arrangements, and improvisations (GPS) (GSSS_C2007-9)
- evaluate a performance, composition, arrangement, and improvisation and compare it to exemplary models (GPS) (GSSS_C2007-10)

D - Cultural and Historical Context

- listen to, analyze, and describe a varied repertoire of music representing diverse genres and cultures (GPS) (GSSS_D2007-11)
- describe the uses of the elements of music and compositional devices and techniques represented by examples of comparative and contrasting works of music (GPS) (GSSS_D2007-12)
- explain relationships among music, the other arts, and disciplines outside the arts by explaining how elements, artistic processes, and organizational principles are used in similar and distinctive ways in the other arts, cultures, and disciplines (GPS) (GSSS_D2007-13)
- identify and explain music in relation to history and culture (GPS) (GSSS_D2007-14)
- classify music by genre, style, or historical period and explain the reasons for these classifications (GPS) (GSSS_D2007-15)
- identify American music genres (GPS) (GSSS_D2007-16)
- trace evolutionary backgrounds of genres, forms, and types of music citing exemplary models, performers, activities, roles, and achievements (GPS) (GSSS_D2007-17)
- describe and analyze a variety of careers and explore avocational and vocational possibilities related to music (GPS) (GSSS_D2007-18)

Fine Arts - Honors String Symphony Orchestra

A - Individual Performance Skills

- perform with expression and technical accuracy, a varied repertoire of music on instrument(s) (GPS) (GSHS_A2007-1)
- improvise melodies, variations, and accompaniments (GPS) (GSHS_A2007-2)
- sight read, accurately and expressively, music with a difficulty level of five (GPS) (GSHS_A2007-3)

Fine Arts

B - Ensemble Performance Skills

- perform, on instrument(s) with others, a varied repertoire of music with expression and technical accuracy with a difficulty level of six (GPS) (GSHS_B2007-4)

C - Music Theory

- compose and arrange music with specified guidelines (GPS) (GSHS_C2007-5)
- demonstrate imagination and technical skill in applying the principles of composition (GPS) (GSHS_C2007-6)
- read and notate music in a full instrumental score (GPS) (GSHS_C2007-7)
- describe how the elements of music are used in a full instrumental score (GPS) (GSHS_C2007-8)
- explain transpositions and clefs (GPS) (GSHS_C2007-9)
- interpret non-standard notation used by contemporary composers (GPS) (GSHS_C2007-10)
- describe, in detail, an aural example of a music work (GPS) (GSHS_C2007-11)
- compare ways in which musical materials are used in music of similar style or genre (GPS) (GSHS_C2007-12)
- analyze and describe the elements of music in a given work that make it unique, interesting, and expressive (GPS) (GSHS_C2007-13)
- evaluate music and music performance by evaluating a given musical work in terms of its aesthetic qualities, and explain the musical means used in it to evoke feelings and emotions (GPS) (GSHS_C2007-14)

D - Cultural and Historical Context

- listen to, analyze, and describe music by perceiving and remembering significant music events (GPS) (GSHS_D2007-15)
- explain relationships among music, the other arts, and disciplines outside the arts (GPS) (GSHS_D2007-16)
- compare how the use of characteristic elements, artistic processes, and organizational principles are used in different historical periods and cultures (GPS) (GSHS_D2007-17)
- compare and contrast the roles of creators, performers, and others involved in the production and presentation of the arts across all arts disciplines (GPS) (GSHS_D2007-18)
- identify and explain music in relation to history and culture by identifying and explaining stylistic features of a given musical work that define its aesthetic tradition and its historical or cultural context (GPS) (GSHS_D2007-19)
- identify and describe music genres and styles that show influence of two or more cultural traditions (GPS) (GSHS_D2007-20)
- describe and analyze a variety of careers and explore avocational and vocational possibilities related to music (GPS) (GSHS_D2007-21)

Fine Arts - Wind Symphony

A - Individual Performance Skills

- perform, on instrument alone, a varied repertoire of music with expression and technical accuracy with a difficulty level of four (GPS) (GSWS_A2007-1)
- improvise melodies, variations, and accompaniments (GPS) (GSWS_A2007-2)
- sight read music, accurately and expressively, with a difficulty level of three (GPS) (GSWS_A2007-3)

B - Ensemble Performance Skills

- perform on instrument(s) with others, a varied repertoire of music with expression and technical accuracy with a difficulty level of four (GPS) (GSWS_B2007-4)

C - Music Theory

- compose and arrange music in several distinct styles, demonstrating creativity in using the elements of music (GPS) (GSWS_C2007-5)
- transcribe existing pieces into other mediums for performance (GPS) (GSWS_C2007-6)
- read and notate music in an instrumental score of up to four staves (GPS) (GSWS_C2007-7)

Fine Arts

C - Music Theory (*continued*)

- describe the uses of the elements of music and compositional devices and techniques represented by examples of comparative and contrasting works of music (GPS) (GSWS_C2007-8)
- evaluate music and music performances by evolving a criteria to make informed, critical evaluations of the quality and effectiveness of performances, compositions, arrangements and improvisations (GPS) (GSWS_C2007-9)
- evaluate a performance, composition, arrangement, and improvisation and compare it to exemplary models (GPS) (GSWS_C2007-10)

D - Cultural and Historical Context

- listen to, analyze, and describe a varied repertoire of music representing diverse genres and cultures (GPS) (GSWS_D2007-11)
- explain relationships among music, the other arts, and disciplines outside the arts by explaining how elements, artistic processes, and organizational principles are used in similar and distinctive ways in the other arts, cultures, and disciplines (GPS) (GSWS_D2007-12)
- identify and explain music in relation to history and culture (GPS) (GSWS_D2007-13)
- classify music by genre, style, or historical period and explain the reasons for these classifications (GPS) (GSWS_D2007-14)
- identify American music genres (GPS) (GSWS_D2007-15)
- trace evolutionary backgrounds of genres, forms, and types of music citing exemplary models, performers, activities, roles, and achievements (GPS) (GSWS_D2007-16)
- describe and analyze a variety of careers and explore avocational and vocational possibilities related to music (GPS) (GSWS_D2007-17)

Fine Arts - Honors Wind Symphony

A - Individual Performance

- perform with expression and technical accuracy, a varied repertoire of music on instrument(s) (GPS) (GSHW_A2007-1)
- improvise melodies, variations, and accompaniments (GPS) (GSHW_A2007-2)
- sight read, accurately and expressively, music with a difficulty level of five (GPS) (GSHW_A2007-3)

B - Ensemble Performance Skills

- perform on instrument(s) with others, a varied repertoire of music with expression and technical accuracy with a difficulty level of six (GPS) (GSHW_B2007-4)

C - Music Theory

- describe how the elements of music are used (GPS) (GSHW_C2007-5)
- explain transpositions and clefs (GPS) (GSHW_C2007-6)
- interpret non-standard notation used by contemporary composers (GPS) (GSHW_C2007-7)
- compose and arrange music with specified guidelines (GPS) (GSHW_C2007-8)
- read and notate music in a full instrumental score (GPS) (GSHW_C2007-9)
- demonstrate imagination and technical skill in applying the principles of composition (GPS) (GSHW_C2007-10)
- describe in detail an aural example of a music selection (GPS) (GSHW_C2007-11)
- compare ways in which musical materials are used in music of similar style or genre (GPS) (GSHW_C2007-12)
- analyze and describe the elements of music in a given work that make it unique, interesting and expressive (GPS) (GSHW_C2007-13)
- evaluate music and music performances by evaluating a given musical work in terms of its aesthetic qualities, and explain the musical means used in it to evoke feelings and emotion (GPS) (GSHW_C2007-14)
- describe in detail an aural example of a music work (GPS) (GSHW_C2007-15)
- compare ways in which musical materials are used in music of similar style or genre (GPS) (GSHW_C2007-16)

Fine Arts

C - Music Theory (*continued*)

- analyze and describe the elements of music in a given work that make it unique, interesting and expressive (GPS) (GSHW_C2007-17)

D - Cultural and Historical Context

- listen to, analyze, and describe music by perceiving and remembering significant music events (GPS) (GSHW_D2007-18)
- explain relationships among music, the other arts, and disciplines outside the arts (GPS) (GSHW_D2007-19)
- compare how the use of characteristic elements, artistic processes and organizational principles are used in different historical periods and cultures (GPS) (GSHW_D2007-20)
- compare and contrast the roles of creators, performers, and others involved in the production and presentation of the arts across all arts disciplines (GPS) (GSHW_D2007-21)
- identify and explain music in relation to history and culture by identifying and explaining stylistic features of a given musical work that define its aesthetic tradition and its historical or cultural context (GPS) (GSHW_D2007-22)
- identify and describe music genres and styles that show influence of two or more cultural traditions (GPS) (GSHW_D2007-23)
- describe and analyze a variety of careers and explore avocational and vocational possibilities related to music (GPS) (GSHW_D2007-24)

Foreign Language (Chinese, Japanese, Spanish) - Modern Language Level I

A - Communication: Interpersonal Mode

- exchange simple spoken and written information in the target language (GPS) (GSML_A2009-1)
- conduct brief oral and written exchanges in the target language (GPS) (GSML_A2009-2)

B - Communication: Interpretive Mode

- demonstrate understanding of simple spoken and written language presented through a variety of media in the target language based on a variety of topics (GPS) (GSML_B2009-3)
- interpret verbal and nonverbal cues to understand simple spoken and written messages in the target language (GPS) (GSML_B2009-4)

C - Communication: Presentational Mode

- present information orally and in writing containing a variety of vocabulary, phrases, and patterns (GPS) (GSML_C2009-5)
- present briefly rehearsed material in the target language (GPS) (GSML_C2009-6)

D - Culture

- identify perspectives, practices, and products of the culture(s) where the target language is spoken (GPS) (GSML_D2009-7)

E - Connections, Comparisons and Communities

- use information acquired in the study of the target language and information acquired in other subject areas to reinforce one another (GPS) (GSML_E2009-8)
- discuss the significance of culture through comparisons of the culture(s) studied and the students' own culture (GPS) (GSML_E2009-9)
- compare basic elements of the target language to the English language (GPS) (GSML_E2009-10)
- recognize current events in the target culture(s) (GPS) (GSML_E2009-11)
- identify situations and resources in which target language skills and cultural knowledge may be applied beyond the classroom setting for recreational, educational, and occupational purposes (GPS) (GSML_E2009-12)

Foreign Language (Chinese, Japanese, Spanish) - Modern Language Level II

A - Communication: Interpersonal Mode

- exchange oral and written information in the target language (GPS) (GSM2_A2009-1)
- conduct oral and written exchanges in the target language (GPS) (GSM2_A2009-2)

B - Communication: Interpretive Mode

- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials (GPS) (GSM2_B2009-3)
- interpret verbal and nonverbal cues to understand spoken and written messages in the target language (GPS) (GSM2_B2009-4)

C - Communication: Presentational Mode

- present information orally and in writing using familiar and newly acquired vocabulary, phrases, and patterns (GPS) (GSM2_C2009-5)
- present rehearsed and unrehearsed material in the target language, such as skits, poems, short narratives, and songs (GPS) (GSM2_C2009-6)

D - Culture

- identify perspectives, practices, and products of the culture(s) where the target language is spoken and how they are interrelated (GPS) (GSM2_D2009-7)

Foreign Language

E - Connections, Comparisons, and Communities

- use information acquired in the study of the target language to reinforce and correlate with other subject areas (GPS) (GSM2_E2009-8)
- discuss similarities and differences between the culture(s) studied and the students' own culture (GPS) (GSM2_E2009-9)
- recognize and use elements of the target language to increase knowledge of English (GPS) (GSM2_E2009-10)
- identify current events and issues in the target culture(s) (GPS) (GSM2_E2009-11)
- develop and apply target language skills and cultural knowledge beyond the classroom setting for recreational, educational, and occupational purposes (GPS) (GSM2_E2009-12)

Foreign Language (Chinese, Japanese, Spanish) - Modern Language Level III

A - Communication: Interpersonal Mode

- exchange (with some originality and spontaneity) oral and written information and ideas in the target language (GPS) (GSM3_A2009-1)
- initiate, sustain, and close oral and written exchanges in the target language, applying familiar vocabulary and structures to new situations (GPS) (GSM3_A2009-2)

B - Communication: Interpretive Mode

- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials (GPS) (GSM3_B2009-3)
- interpret verbal and nonverbal cues to understand more complex spoken and written messages in the target language (GPS) (GSM3_B2009-4)

C - Communication: Presentational Mode

- present information orally and in writing using familiar and newly acquired vocabulary, phrases, and patterns in increasingly complex sentences (GPS) (GSM3_C2009-5)
- present student-created as well as culturally authentic material in the target language (GPS) (GSM3_C2009-6)

D - Culture

- discuss perspectives, practices, and products of the culture(s) studied and how they are interrelated (GPS) (GSM3_D2009-7)

E - Connections, Comparisons and Communities

- reinforce and broaden knowledge of connections between the target language and other disciplines (GPS) (GSM3_E2009-8)
- analyze similarities and differences that exist within and among the culture(s) studied (GPS) (GSM3_E2009-9)
- strengthen knowledge of the English language through the study and analysis of linguistic elements of the target language (GPS) (GSM3_E2009-10)
- discuss current events and issues in the target culture(s) (GPS) (GSM3_E2009-11)
- improve language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes (GPS) (GSM3_E2009-12)

Foreign Language (Chinese, Japanese, Spanish) - Modern Language Level IV

A - Communication: Interpersonal Mode

- exchange a variety of oral and written information and ideas in the target language related to history, literature, contemporary events, and issues (GPS) (GSM4_A2009-1)
- initiate, sustain, and close oral and written exchanges in the target language, applying familiar vocabulary and structures to new situations (GPS) (GSM4_A2009-2)

Foreign Language

B - Communication: Interpretive Mode

- demonstrate understanding of spoken and written language on new and familiar topics presented through a variety of media in the target language, including authentic materials (GPS) (GSM4_B2009-3)
- interpret verbal and nonverbal cues to understand increasingly complex spoken and written messages in the target language (GPS) (GSM4_B2009-4)

C - Communication: Presentational Mode

- present information orally and in writing using familiar and newly acquired vocabulary, phrases, and patterns in increasingly complex sentences (GPS) (GSM4_C2009-5)
- present student-created as well as culturally authentic material in the target language (GPS) (GSM4_C2009-6)

D - Culture

- describe and discuss in the target language perspectives, practices, and products of the culture(s) studied and how they are interrelated (GPS) (GSM4_D2009-7)

E - Connections, Comparisons and Communities

- reinforce and broaden knowledge of the connections between the target language and other subject areas (GPS) (GSM4_E2009-8)
- analyze the similarities and differences that exist within and among the culture(s) studied (GPS) (GSM4_E2009-9)
- expand knowledge of the English language through the study and analysis of linguistic elements of the target language (GPS) (GSM4_E2009-10)
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes (GPS) (GSM4_E2009-11)

Foreign Language (Chinese, Japanese, Spanish) - Modern Language Level V

A - Communication: Interpersonal Mode

- exchange oral and written information and ideas in the target language on topics related to contemporary events, history, and literature (GPS) (GSM5_A2009-1)
- combine and extend known elements and conversational input to create sentences (GPS) (GSM5_A2009-2)

B - Communication: Interpretive Mode

- demonstrate comprehension of more complex spoken and written language on topics related to contemporary, historical, and literary events and issues presented through a variety of media in the target language, including authentic materials (GPS) (GSM5_B2009-3)
- interpret verbal and nonverbal cues to understand more complex spoken and written messages in the target language (GPS) (GSM5_B2009-4)

C - Communication: Presentational Mode

- present previously learned as well as newly acquired information on topics related to contemporary, historical, and literary events and issues using cultural references where appropriate, in increasingly complex sentences (GPS) (GSM5_C2009-5)
- present student-created as well as culturally authentic stories, poems, skits, and/or short plays in the target language (GPS) (GSM5_C2009-6)

D - Culture

- describe and discuss in the target language perspectives, practices, and products of the cultures studied and how they are interrelated (GPS) (GSM5_D2009-7)

E - Connections, Comparisons, and Communities

- reinforce and broaden knowledge of the connections between the target language and other subject areas (GPS) (GSM5_E2009-8)
- analyze the similarities and differences that exist within and among the culture(s) studied (GPS) (GSM5_E2009-9)

Foreign Language

E - Connections, Comparisons, and Communities (*continued*)

- expand knowledge of the English language through the study and analysis of linguistic elements of the target language (GPS) (GSM5_E2009-10)
- apply language skills and expand cultural understanding by accessing information beyond the classroom setting for recreational, educational, and occupational purposes (GPS) (GSM5_E2009-11)

Health and Fitness - Lifetime Health and Fitness

A - First Aid

- demonstrate ability to properly respond to a cardiopulmonary emergency (GPS) (GSLH_A2007-1)

B - Safety

- evaluate one's personal responsibility for the safety of self and others when operating or occupying a motor vehicle (GPS) (GSLH_B2007-2)

C - Personal Care

- evaluate and improve personal health practices (GPS) (GSLH_C2007-3)

D - Disease Prevention

- analyze how risk behaviors associated with the leading causes of morbidity and mortality can be minimized through healthful practices (GPS) (GSLH_D2007-4)
- assess prevalence, modes of transmission, symptoms, and diagnostic tests for sexually transmitted diseases including HIV (GPS) (GSLH_D2007-5)
- assess methods of prevention for contracting sexually transmitted diseases, including HIV, with particular emphasis on abstinence as the only sure way to prevent sexually transmitted diseases (GPS) (GSLH_D2007-6)
- evaluate factors that contribute to disease: heredity, inactivity, environment, infection, diet, stress, and degenerative processes (GPS) (GSLH_D2007-7)

E - Tobacco, Alcohol and Other Drugs

- assess the roles and responsibilities of individuals, communities, and government in preventing and controlling substance abuse (GPS) (GSLH_E2007-8)
- determine how adolescent alcohol and other drug use contributes to accidents, crime, and suicide (GPS) (GSLH_E2007-9)
- analyze how alcohol and other drug use impacts personal goals, educational opportunities, and occupational choices (GPS) (GSLH_E2007-10)

F - Nutrition

- critically evaluate nutrition claims from advertisements and nutrition-related news stories (GPS) (GSLH_F2007-11)
- design diets meeting health requirements for adolescents according to the recommended dietary allowances and for people with specific health problems or restrictions (GPS) (GSLH_F2007-12)
- evaluate diet relative to personal needs, dietary guidelines, and energy balance (GPS) (GSLH_F2007-13)

G - Emotional Expression / Mental Health

- contrast constructive and destructive ways of resolving concerns and conflicts (GPS) (GSLH_G2007-14)
- analyze stress and its effects on all aspects of health and wellness (GPS) (GSLH_G2007-15)
- evaluate various ways of preventing violence (GPS) (GSLH_G2007-16)
- identify the emotional effects of premarital sexual involvement (GPS) (GSLH_G2007-17)

H - Family Life

- examine attitudes and behaviors essential to the growth and maintenance of positive human relationships (GPS) (GSLH_H2007-18)
- explain the need to make conscious decisions regarding sexuality based on family values, personal responsibilities, self interests, and future goals (GPS) (GSLH_H2007-19)
- distinguish factors that promote a positive self-image (GPS) (GSLH_H2007-20)
- trace the human growth cycle from the prenatal period through the elderly stage (GPS) (GSLH_H2007-21)
- review the nature and purposes of dating including family guidelines, functions of dating, coping with the pressures and the importance of setting standards for controlling sexual behavior (GPS) (GSLH_H2007-22)
- analyze the skills and attitudes needed to become competent parents (GPS) (GSLH_H2007-23)

Health and Fitness

I - Anatomy

- analyze the process of respiration, circulation, and energy production to supply anatomical needs related to health and physical activity (GPS) (GSLH_I2007-24)

J - Fitness

- demonstrate safety precautions during exercise for the prevention of injury (GPS) (GSLH_J2007-25)
- explain the effects of weather and climate on exercise (GPS) (GSLH_J2007-26)
- explain the relationship between physical fitness and stress management (GPS) (GSLH_J2007-27)
- demonstrate ability to assess personal level of fitness for all components of a health-related fitness assessment (GPS) (GSLH_J2007-28)
- develop goals and a plan of improvement or maintenance for all fitness components using results from a health-related fitness assessment (GPS) (GSLH_J2007-29)
- implement and evaluate self-designed fitness plan (GPS) (GSLH_J2007-30)
- demonstrate progress towards or meet health-related fitness standards as defined by research (GPS) (GSLH_J2007-31)
- select and evaluate physical activities from a variety of facilities, based on personal interest, goals, and fulfillment (GPS) (GSLH_J2007-32)
- apply movement concepts, principles, strategies, and tactics as they apply to selected activities (GPS) (GSLH_J2007-33)
- demonstrate competency in movement patterns (GPS) (GSLH_J2007-34)
- compare and contrast how activity participation patterns are likely to change throughout life and plan strategies to deal with those changes (GPS) (GSLH_J2007-35)
- describe how each component of health-related fitness is developed and maintained using the principles of training (GPS) (GSLH_J2007-36)
- discuss dietary needs and practices necessary for optimal physical fitness (GPS) (GSLH_J2007-37)
- explain the difference in training for the development of muscular strength and muscular endurance (GPS) (GSLH_J2007-38)
- create motivational strategies for enhancing participation in health-related fitness activities (GPS) (GSLH_J2007-39)
- demonstrate a positive attitude toward physical self and lifelong physical activity (GPS) (GSLH_J2007-40)
- participate regularly in some form of health-enhancing activity (GPS) (GSLH_J2007-41)
- demonstrate ability to access and interpret information regarding age-appropriate fitness levels (GPS) (GSLH_J2007-42)



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