

The Campus Science Department would like to add to new classes to the fall 2012 schedule. The classes are Honors Biology and Honors Chemistry. The regular classes are currently being taught but higher level classes are needed to support advanced placement and international baccalaureate streams.

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State Standards Addressed by Honors Chemistry

Curricular Standards:

Standard 1: Science as Inquiry

Standard 2a: Chemistry

(Standard sheets are attached)

Reading Standards:

Common Core Standards for Literacy in Science 6 – 12

(Standard sheets attached)

STANDARD 1: SCIENCE AS INQUIRY

Grades 8-12

SCIENCE AS INQUIRY – The student will develop the abilities necessary to do scientific inquiry and develop an understanding of scientific inquiry.

Benchmark 1: The student will demonstrate the abilities necessary to do scientific inquiry.

Grades 8-12 Indicators	Additional Specificity
The student... - actively engages in asking and evaluating research questions. ▲ actively engages in investigations, including developing questions, gathering and analyzing data, and designing and conducting research ▲ actively engages in using technological tools and mathematics in their own scientific investigations.	- Well-formed research questions drive scientific inquiry. - The scientific investigations includes, when appropriate, - formulating a testable hypothesis. - identify and test variables (independent, dependent, and variables to be kept constant). - using methods for gathering data that is observable, measurable, and replicable. - analyzing and evaluating the results in order to clarify the questions and hypotheses, and to refine methods for further research. - using a variety of technologies, such as hand tools, measuring instruments, calculators, and computers as an integral component of scientific investigations. - using common mathematical functions to analyze and describe data. - uses statistical and graphing data analysis techniques. - recognizes that the accuracy and precision of the data, and therefore the quality of the investigation, depends on the instruments used. - using equipment properly and safely.

4. actively engages in conducting an inquiry, formulating and revising his or her scientific explanations and models (physical, conceptual, or mathematical) using logic and evidence, and recognizing that potential alternative explanations and models should be considered. 5. actively engages in communicating and defending the design, results, and conclusion of his/her investigation.	4. a. engages in discussions that result in the revision of his/her explanation. b. analyzes their explanation by reviewing current scientific understanding, weighing the evidence, and examining the logic so as to decide which explanations and models have the greatest explanatory power. c. evaluates personal preconceptions and biases with respect to his/her conclusions. d. based on their results, students consider modifications to their investigations. 5. a. writes procedures, expresses concepts, reviews information, summarizes data, and uses language appropriately. b. develops diagrams and charts to summarize and analyze data. c. presents information clearly and logically, both orally and in writing. d. constructs reasoned arguments. e. responds appropriately to critical comments.
Teacher Notes: Students actively involved in asking and answering their own questions, can connect the science they are learning in the classroom with real-world applications. ▲ = High School Assessed Indicator	

STANDARD 2A: CHEMISTRY

Grades 8-12

CHEMISTRY – The student will develop an understanding of the structure of atoms, *compounds*, chemical reactions, and the interactions of energy and matter.

Benchmark 1: The student will understand the structure of the atom.

Grades 8-12 Indicators	Additional Specificity
The student ... 1. ▲ understands atoms, the fundamental organizational unit of matter, are composed of subatomic particles. Chemists are primarily interested in the protons, electrons, and neutrons found in the atom. 2. understands isotopes are atoms with the same atomic number (same number of protons) but different numbers of neutrons. The nuclei of some atoms are radioactive isotopes that spontaneously decay, releasing radioactive energy.	1 a. All atoms are identified by the number of protons in the nucleus, i.e. the atomic number. The protons have a positive charge and a mass of 1 amu. Protons and neutrons are found in the small, dense, nucleus. b. Neutrons have a neutral charge and a mass of 1 amu. c. The electrons have a negative charge and are found outside the nucleus in an electron cloud. The mass of an electron is approximately 2,000 times smaller than a proton. The electrons determine the size and chemical properties of the atom. a. The number of electrons is equal to the number of protons in a neutral atom. Ions have a different number of electrons than protons. b. 2 a. The periodic table reflects the average mass of the isotopes. b. Examples of released radioactivity are alpha, beta, and gamma radiation. c. Some isotopes spontaneously decay at a first order rate. There is a negative linear relationship between the log of the sample isotope concentration vs. time,

	d. To balance a nuclear equation, the sum of the atomic numbers and the sum of the mass numbers must be equal on both sides of the equation.
Teacher Notes: These concepts are basic to physics, chemistry, biology, earth/space science. ▲ = High School Assessed Indicator	

STANDARD 2A: CHEMISTRY

Grades 8-12

CHEMISTRY – The student will develop an understanding of the structure of atoms, *compounds*, chemical reactions, and the interactions of energy and matter.

Benchmark 2: The students will understand the states and properties of matter.

Grades 8-12 Indicators	Additional Specificity
The student ... 1. ▲ understands chemists use kinetic and potential energy to explain the physical and chemical properties of matter on earth that may exist in any of these three states: solids, liquids, and gases. 2. ▲ understands the periodic table lists elements according to increasing atomic number. This table organizes physical and chemical trends by groups, periods, and sub-categories.	1a. Elements and molecules may exist as gases, liquids or solids. Ionic compounds most commonly exist as solids. b. Intermolecular attraction (attraction between molecules) determines the state of the molecule. Examples of intermolecular attraction include hydrogen bonding, permanent dipole interaction, and induced dipole interaction. Gases have the weakest and solids have the greatest intermolecular attraction. The hydrogen bond is an intermolecular attraction responsible for the properties of water and many biological molecules. 2a. Elements in the same group have the same number of valence electrons and can be used to predict similar physical and chemical properties. Elements are grouped by similar ground state valence electron configurations. b. As periods increase, the principle energy levels of the outermost (<i>valence</i>) electrons increase. Electrons changing from one energy level to another may result in the emission or absorption of various forms of electromagnetic radiation, including the range of colors that form visible light. When there is color, there are electrons changing energy levels. c. Sub-categories are regions such as metals, non-metals, and transition elements. Nonmetals have different physical and chemical properties than metals. For example, nonmetals have lower melting points, lower density, and are poorer conductors of electricity and heat. Chemical properties depend on the subshell of the valence electrons which are different for metals and non-metals.

3. ▲ understands chemical bonds result when valence electrons are transferred or shared between atoms. Breaking a chemical bond requires energy. Formation of a chemical bond releases energy. Ionic compounds result from atoms transferring electrons. Molecular compounds result from atoms sharing electrons.
For example, carbon atoms can bond to each other in chains, rings, and branching networks. Branched network and metallic solids also result from bonding.

3 a. Valence electron configurations determine whether an atom gains, loses, or shares electrons to achieve a more stable electron configuration similar to the noble gases.

b. Positively charged ions are called cations, and negatively charged ions are called anions. Cations are attracted to anions (opposite charges attract). Most cations are metals; most anions are nonmetals. In stable ionic compounds, the sum of the charges is zero.

c. Covalent bonds form when two or more atoms share one or more pairs of electrons to achieve a more stable electron configuration. The two classifications of covalent bonds are nonpolar and polar. The greater the electronegativity difference between atoms involved in the bond, the more polar the bond.

d. The energy required to break ionic bonds is greater than the energy required to break covalent bonds. Heat exchange during a chemical reaction is often easily noticed: a reaction that absorbs heat will feel colder; a reaction that releases heat will feel warmer.

e. Carbon atoms can bond to each other in chains, rings, and branching networks to form a variety of molecular structures including relatively large molecules essential to life. Diamonds, a 3-dimensional branching of carbon atoms and quartz, a repeated 3-dimensional branching of silicon dioxide molecules, are further examples of network solids. Unique properties of network solids include hardness, high melting points, poor conductors - indicative of covalent bonding and stable geometry.

f. Metallic bonding is defined as free roaming electrons forming a negative sea of electrons surrounding the positive metal ions.

Teacher Notes:

The states and classes of matter are introduced in Grade 3-4 and further developed in the Grades 5-7. Grades 8-12 students should be able to explain these concepts at an advanced molecular level.

▲ = High School Assessed Indicator

STANDARD 2A: CHEMISTRY

Grades 8-12

CHEMISTRY – The students will develop an understanding of the structure of atoms, *compounds*, chemical reactions, and the interactions of energy and matter.

Benchmark 3: The student will gain a basic concept of chemical reactions.

Grades 8-12 Indicators	Additional Specificity
The student ...	
1. ▲ understands a chemical reaction occurs when one or more substances (reactants) react to form a different chemical substance(s) (products). There are different types of chemical reactions all of which demonstrate the Law of Conservation of Matter and Energy.	1a. Chemical reactions are written as balanced chemical equations. In ordinary chemical reactions, the number and kind of atoms must be conserved. b. Examples of chemical reactions are synthesis, decomposition, combustion, single and double replacement, acid/base, and oxidation/reduction. c. Two or more of the following may often identify chemical reactions: physical property change, effervescence, mass change, precipitation, light emission, and heat exchange. d. The rate (speed) of a chemical reaction depends on such parameters as temperature, concentration, catalysts, inhibitors, surface area, and reaction type.
2. understands how to perform mathematical calculations regarding the Law of Conservation of Matter, i.e., through stoichiometric relationships.	2a..Reaction stoichiometry involves understanding the use of coefficients (moles) to balance equations and solve for a variety of relationships using the molar mass of the substances. Examples of these types of relationships include mole/mole, mole/mass, mole/volume, mass/volume, mass/mass, etc.
3. understands the differences and reactions between acids, bases, and salts. Perform calculations to determine the concentration of ions in solutions.	3a. Acids react with bases to produce water and salt. b. pH is a logarithmic function of hydronium ion concentration. pH decreases as the hydronium ion concentration increases. pOH and hydroxide concentrations are found in a similar way.

	c. Determination of an unknown base may be determined by experimental titration and use of $M_a \times V_a = M_b \times V_b$. d. Dilution formulas ($M_1 \times V_1 = M_2 \times V_2$) can be used to determine the concentration of a solution after diluting it with water.
Teacher Notes: ▲ = High School Assessed Indicator	

Common Core Standards – English Language Arts K-12

The standards are organized into three main sections

Standards for
English Language Arts
— and —
Literacy in History/Social Studies,
Science, and Technical Subjects
GRADES K-5

Standards for
English Language Arts
GRADES 6-12

Standards for
Literacy in History/Social Studies,
Science, and Technical Subjects
GRADES 6-12

Each section is divided into strands

Reading

Reading

Reading

10 Anchor Standards

Writing

Writing

Writing

10 Anchor Standards

Speaking & Listening

Speaking & Listening

6 Anchor Standards

Language

Language

6 Anchor Standards

Each strand features grade-level standards that are anchored in
college and career readiness standards

Anchor Standards* for Literacy Learning

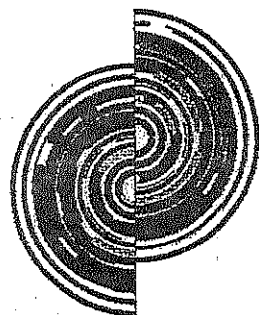
The "Anchor Standards for Literacy Learning" were added by the Kansas Department of Education (KSDE) as part of the KS 15% for English Language Arts**. The purpose of the Kansas 15% is to emphasize concepts and teaching philosophies that are important in Kansas. Although most of the concepts included within these standards are mentioned in the Common Core State Standards (CCSS), KSDE wanted to highlight the importance of each one.

The "Anchor Standards for Literacy Learning" underscore the idea that comprehensive literacy instruction should occur both across the curriculum and within each discipline and that *all educators* share responsibility for the literacy learning of all students. Comprehensive literacy instruction should address skills in reading, writing, thinking, listening, and speaking and should be approached in a cohesive and integrated fashion rather than as discrete skills taught in isolation.

(*Standards noted with a  are part of the KS 15% for English Language Arts)

College and Career Readiness Anchor Standards for Literacy Learning		
Literacy Learning	 1	Engage in literacy learning through a collaborative and community effort and in an integrated fashion, rather than as discrete skills in isolation.
	 2	Use meta-cognitive strategies to monitor literacy learning progress.
	 3	Engage the five essential components of reading (phonemic awareness, phonics, fluency, vocabulary, and comprehension) at all grade levels based on individual student needs.
	 4	Engage a strategic and coherent focus on literacy learning across all content areas with shared literacy responsibility from all Kansas educators.
	 5	Develop the literacy skills presented throughout these standards in both academic and career/technical education contexts.

**Four other anchor standards were added by the Kansas Department of Education as part of the KS 15% for English Language Arts. They are noted in the "Anchor Standards for Reading" and "Anchor Standards for Writing" sections below.



STANDARDS FOR

**Literacy in
History/Social Studies,
Science, and Technical Subjects**

6-12

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see "Research to Build and Present Knowledge" in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

Reading is critical to building knowledge in history/social studies as well as in science and technical subjects. College and career ready reading in these fields requires an appreciation of the norms and conventions of each discipline, such as the kinds of evidence used in history and science; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational texts in these fields with independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of the disciplines, not replace them.

Reading Standards for Literacy in History/Social Studies 6–12

The standards below begin at grade 6; standards for K–5 reading in history/social studies, science, and technical subjects are integrated into the K–5 Reading standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
3. Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	3. Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.	3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines <i>faction</i> in <i>Federalist</i> No. 10).
5. Describe how a text presents information (e.g., sequentially, comparatively, causally).	5. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.	5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	6. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.	6. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.
Integration of Knowledge and Ideas		
7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.	7. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.
8. Distinguish among fact, opinion, and reasoned judgment in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claims.	8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.
9. Analyze the relationship between a primary and secondary source on the same topic.	9. Compare and contrast treatments of the same topic in several primary and secondary sources.	9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend history/social studies texts in the grades 11–CCR text complexity band independently and proficiently.

Reading Standards for Literacy in Science and Technical Subjects 6–12

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Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of science and technical texts.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
Craft and Structure		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 6–8 texts and topics</i> .	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 9–10 texts and topics</i> .	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i> .
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., <i>force</i> , <i>friction</i> , <i>reaction force</i> , <i>energy</i>).	5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–CCR text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college and career ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline and the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12

The standards below begin at grade 6; standards for K-5 writing in history/social studies, science, and technical subjects are integrated into the K-5 Writing standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
1. Write arguments focused on <i>discipline-specific content</i>. a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments focused on <i>discipline-specific content</i>. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.	1. Write arguments focused on <i>discipline-specific content</i>. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
Text Types and Purposes (continued)		
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Honors Chemistry Units

Unit One – Introduction to the Methods of Chemistry

Unit Two – Atomic Structure

Unit Three – Electrons and Periodic Behavior

Unit Four – Bonding and Molecular Structure

Unit Five – Conservation of Matter and Stoichiometry

Unit Six – Gases, Liquids, Solids, and Solutions

Unit Seven – Kinetics and Thermodynamics

Unit Eight- Equilibrium

Unit Nine – Nuclear Chemistry

Unit Ten – Organic Chemistry

All units except for Unit Eight are currently covered in Regular Chemistry. The honors course will cover several new sections in each unit including new labs.

The Honors class will incorporate on-line activities to a great extent inside and outside the classroom. Projects will be included in each unit as inquiry based learning following the international baccalaureate curriculum guidelines. Computer interface will be heavily relied on in labs with the use of probe packages. No new books will be needed. Resources already owned by the school district will be utilized. A new Vernier probe package was purchased in fall 2011 for AP chemistry and will be used by the two honors classes. The classes will be supported by black board to a greater extent than currently used in the science department. Clickers, hover cam, flip cameras, and other available technology will be incorporated throughout each unit. A research project will be required of each student using standards from the English department.

The honors biology and chemistry classes will be closely aligned using the same rubrics, grading system, and classroom policies and procedures as the AP and IB classes. The classes will be both beneficial to students involved and not involved in the AP and IB classes.

No additional budget requirements necessary.

Needs Assessment

At Campus High school, honors English and social studies classes are already in place and full. Currently there are no honors science classes. Because of this, many students are not as prepared as they could be for advanced classes. In the past four years, the enrollment in advanced science classes has greatly increased. Students want to take more challenging classes. With the advent of IB, the necessity of honors science classes becomes evident. The two teachers involved have been to workshops that have stressed the need to prepare students thoroughly for their upper division science classes. The success in those classes is dependent on their preparation. Much higher level learning activities need to be done so the student can be ready and confident when coming to a higher level class. Colleges are seeing a problem in entry level science classes with student preparedness. Honors science classes will help give Campus high school student the best preparation possible for entry level college science classes.