

**Missouri Course Access and Virtual School Program (MOCAP)**  
**Course Descriptions-SchoolsPLP**

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**ALGEBRA I A/B**

Students build on the foundational concepts presented in Grades K-8. Algebraic thinking and symbolic reasoning play a critical role in algebra. Since functions provide the foundation of Algebra I and Algebra II, this course uses a “function” approach as it provides the student opportunities to solve problems in real life situations. The study of functions, equations and their relationships is central to all of mathematics. Students perceive functions and equations as a means for analyzing and understanding a broad variety of relationships and as a useful tool for expressing generalizations. Students perceive the connections between algebra and geometry and use the tools of

one to help solve problems in the other. Students use concrete, pictorial, numerical, symbolic, graphical, and verbal tools and technology to model mathematical situations to solve meaningful problems. The course is not totally dependent upon a graphing calculator, but it is used extensively throughout the year.

## **ALGEBRA II A/B**

Concepts of Algebra I will be reviewed and extended. This course requires a degree of mathematical maturity on the part of the student. Topics covered will be irrational and imaginary numbers, functional relationships, (linear, quadratic, exponential, logarithmic, absolute value, square root, and rational) conic sections, and uses of algebra to analyze and solve problems.

## **BIOLOGY A/B**

In Biology, students will develop appreciation for the living world. A brief history of biology followed by an investigation of the basic unit of life—the cell—will prepare students for deeper research. Students will explore topics concerning genetics, including meiosis, heredity, and DNA. Students will consider natural selection, origin of life theories, and the mechanics of evolution. An exploration of “little critters” such as bacteria precedes a study of plant structures, processes, and reproduction. Students will inquire into animal behavior and characteristics as they study invertebrates, amphibians, reptiles, birds, and mammals, among others. An inspection of nutrition and disease will lead students to examine human body systems. The course will conclude with an analysis of the interdependence of living things in ecosystems.

## **CHEMISTRY A/B**

A foundational branch of physical science, the principles and laws of chemistry find many applications in business, technology, health care, and other fields outside traditional scientific areas. Beginning with a look at measurements, calculations, data analysis, and the scientific method, students will investigate the properties of elements, compounds, and mixtures. A survey of the history of theories of atomic structure will lead students to MendeléeV’s periodic table and an inspection of periodic law. Next, students will apply atomic theory in the study of molecular and chemical bonding interactions through chemical formulas, reactions, and stoichiometry. Students’ knowledge will expand as they learn about the states of matter, gas laws, solutions, acids and bases, thermochemistry and reaction kinetics, and oxidation-reduction reactions. The course concludes with inquiries into organic chemistry, biochemistry, and nuclear chemistry. Throughout the course, there are lab investigations, including video labs, to reinforce science concepts and skills.

## **ENGLISH I A/B**

English 1 launches a four-year journey during which students will confidently master grammar, develop advanced communication skills, and learn to analyze and appreciate challenging literature. The course begins with grammar fundamentals including sentence structure, parts of speech, and phrases and clauses. Students’ vocabulary will expand through a study of technology, literary terms, and words with multiple meanings. Culturally diverse texts will emphasize literary elements and techniques while an overview of short and long prose will delve into excerpts from classic literature and Shakespeare. This will expand the students’ literary world. Writing skills will advance as students learn and apply the steps for creating a research paper. The course includes coverage of effective speaking and listening.

## **ENGLISH II A/B**

English 2 begins with a major focus on grammar to help students become stronger writers. Students then analyze literary genre elements in various excerpts of classical stories. A novel study and play accompany the course to study for analysis, as well. Students compare informational texts and have various writing projects. For example, they write an analytical essay on a short story and a persuasive essay that they also present as a speech. Their research paper is about a topic they choose in which they construct a multi-media presentation to accompany it. Additionally, this course includes work-related documents with students constructing their own resumés and letters.

## **ENGLISH III A/B**

In English 3, students focus on the development of American Literature and compare it with ideas and forms of literature around the world. Students review the basics of the language arts, then scaffold with practices of increasing complexity to meet the required grade-level objectives of analytical thinking. Engaging in a step-by-step process, students learn to write complex analyses and argument papers. Students also learn principles in research, teamwork, discussion, and presentation skills. A play and novel highlights literary devices with supporting literature. Additionally, students explore college and career planning as well as tips for dealing with information in technology today.

## **ENGLISH IV A/B**

This course challenges students with rigorous and rewarding assignments. Students will explore the development of English language and survey famous British fiction authors. They will examine the effect of time upon literary works, as well as make advanced studies of drama, plot structures, devices, and motivations. Students will probe nonfiction texts as well as read and analyze British literature. Conducting research, organizing ideas, and preparing presentations, students will create an argumentative persuasive text, a story with conflict and resolution, a poem, a script, and an analytical essay. In addition, students will learn to write for real-life situations such as e-mail and professional resumés. Students will apply critical thinking skills to gain perspective on the media and analyze speeches.

## **ENGLISH LANGUAGE ARTS 3 A/B**

This course focuses on expanding students' reading, writing, spelling, speaking, and listening skills. In this course, students read more complex texts and write to express themselves with greater sophistication. They practice reading at a natural pace while using intonation and expression appropriately. While reading, they interpret texts in more complex ways, by identifying cause and effect, determining tone and mood, and distinguishing shades of meaning in figurative language. This course introduces students to new genres, including opinion pieces, biographies, and blogs, while they continue to work with narratives, fiction, and informational texts. An emphasis is placed on grammar, punctuation, and spelling as students explore the functions of nouns, pronouns, verbs, adjectives, and adverbs; categorize nouns; explain the differences between various verb tenses; write simple, complex, and compound sentences; and use capitalization, commas, and quotation marks correctly. They learn the spelling of words with various prefixes and suffixes; regular and irregular nouns, verbs, and adjectives; and contractions, compound words, homophones, and words with various vowel sounds. Students develop their speaking and listening skills by planning, writing, and delivering an oral presentation and by creating visual aids to accompany the presentation. English Language Arts 3 also introduces students to new forms of writing, such as scripts, autobiographies, and outlines. They practice drafting and revising their writing through the development of journal entries, short stories, opinion pieces, and narratives. Students expand their research skills by learning to

take notes while researching and to organize their notes into categories. They also gather information using both print and electronic sources. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

### **ENGLISH LANGUAGE ARTS 4 A/B**

This course focuses on expanding their reading, writing, spelling, speaking, and listening skills, with a heavy emphasis on solidifying their writing skills. They use narrative, descriptive, opinion, persuasive, and informative pieces to learn to state ideas, facts, and opinions clearly while correctly using introduction, body, and conclusion paragraphs. Students create a plan for writing, revise and edit their work, and improve their writing using feedback from an adult. Through their writing, they continue to master the conventions of English grammar, including quotations, relative pronouns, progressive verb tenses, modal auxiliaries, prepositional phrases, antecedents, coordinating conjunctions, compound sentences, capitalization, and punctuation, while avoiding sentence fragments and run-on sentences. They learn to spell words with a wide variety of prefixes and suffixes in addition to homophones, possessives, compound words, and words with silent letters. While reading, students identify, describe, and analyze story elements and compare and contrast these elements in stories, myths, and literature from various cultures. Students further develop their research skills by conducting short research projects, taking notes during research, and creating bibliographies. They develop more concrete speaking skills by creating and delivering presentations on various topics. In addition, students create audio recordings and visual aids to supplement their presentations. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

### **ENGLISH LANGUAGE ARTS 5 A/B**

Students solidify their foundational skills in reading, writing, spelling, speaking, and listening. Students read a variety of texts this year, including fiction, nonfiction, and informational texts. They identify the author's purpose in multiple forms of writing, such as descriptive, expository, technical, persuasive, and narrative passages. Through these texts, they learn to make inferences and analyze multiple accounts of the same event. They also identify, interpret, and compare similes, metaphors, and idioms used in writing and learn to draw a plot diagram and to identify common themes in literature. This year, students write a five-paragraph essay and an effective thesis statement. They follow the writing process to develop essays, create outlines to organize their ideas, and revise and improve their original draft. Students also write a persuasive letter, a speech, and a script. This course teaches and reinforces spelling rules, such as i before e, while also focusing on the spelling of words ending in a silent e, commonly misspelled words, and words with multiple syllables. Students sharpen their research skills by learning to use notecards for research, gathering information about the same topic from multiple sources, and understanding plagiarism and the importance of writing in their own words. They also practice citing sources by creating a bibliography. Students enhance their presentation skills by reporting on a text or topic, telling a story, retelling an experience, or presenting an opinion in an organized way while using facts and details to support the main idea. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

### **MATHEMATICS 3 A/B**

Students focus on multiplication and division, as this course aims to build strong foundational skills in these areas. Students explore the relationship between multiplication and division and practice using the order of operations to solve problems, including one- and two-step word problems. In addition to using place value to perform multidigit arithmetic, students round numbers to the nearest ten or hundred. They refine their mathematics skills in relation to money by making change using a combination of bills and coins. Mathematics 3 presents area and perimeter to students as they explore linear and area measurements. They also work with fractions as numbers in this course,

representing them on number lines, generating equivalent fractions, and comparing fractions with the same numerator and denominator. Finally, students explore the ways in which various types of data can be displayed. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

### **MATHEMATICS 4 A/B**

Students refine their skills in the areas of place value, measurement, geometry, fractions, and decimals. They use the order of operations to solve problems with whole numbers up to 1 million, and they explore factors and multiples ranging from 1 to 100. Students use equations, arrays, and area models to explain multiplication calculations. They compare multidigit whole numbers, fractions, and decimals using the symbols for greater than, less than, and equal to. Students practice converting measurements, such as feet to inches, and they use their understanding of size to determine whether measurements are reasonable answers to problems. Mathematics 4 introduces students to the protractor, which they use to measure angles in whole number degrees. Students learn to identify right triangles, and they sketch angles, lines, segments, and rays. Students look closely at fractions and decimals in this course by writing equivalent fractions, ordering fractions from least to greatest, comparing fractions with different numerators and denominators, and writing fractions as decimals and vice versa. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

### **MATHEMATICS 5 A/B**

Mathematics 5 focuses on developing students' math skills and problem-solving strategies. Problems and activities are designed to get students reasoning abstractly and quantitatively, constructing arguments, and modeling with mathematics. Students add, subtract, and multiply fractions, divide fractions by whole numbers, and divide whole numbers by fractions. They perform multiple operations with decimals in addition to comparing, ordering, and rounding them. They use exponents to denote powers of 10. Students are introduced to volume and how to calculate it and classify two-dimensional shapes into categories. They also graph data on a plot line and the coordinate plane, using graphs to solve real-world and mathematical problems. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

### **MATHEMATICS 6 A/B**

This course addresses all grade 6 standards and focuses on using ratios to describe proportional relationships involving number, geometry, measurement, and probability and adding and subtracting decimals and fractions.

### **SCIENCE 3 A/B**

This course guides students on an exploration of the natural world, its animals, its plants, and its terrain. They learn how clouds form, what causes the cycles of seasons and of day and night on Earth, and that light and sound are actually energy. Students examine the Earth's eight major biomes and identify how adaptations help plants and animals to survive varying conditions. They become junior meteorologists, able to explain weather and climate and to use weather instruments and knowledge of patterns to observe and predict the weather. Students recognize the information fossils can provide about the Earth's past and use geologic time scales to identify the eras when fossilized organisms lived. They explain how chemical reactions can change the properties of matter, and they investigate energy, magnetism, and electricity. Finally, students research topics and formulate questions, make predictions and observations, experiment and measure using scientific tools, and draw inferences and identify patterns based on their scientific inquiries. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

## **SCIENCE 4 A/B**

This course lays a foundation for future excellence in the STEM fields by introducing technology and engineering concepts, such as simple and complex machines and the steps of the engineering design process. This course encourages students to become innovative problem-solvers equipped with the skills and knowledge necessary to address twenty-first century issues. Students explore the technical and sometimes surprising facts behind the things they see and experience every day. They expand their knowledge and understanding of topics in the areas of physics, chemistry, Earth science, ecology, biology, and space science. Students investigate genetics and the physical characteristics of living things, ecosystems and extinction, agriculture and sustainable resources, and pollution and recycling. They get to know the Earth's landforms and the types of rocks and soil, and extend their learning beyond the Earth to the solar system and the Milky Way. Finally, students encounter important concepts in physics, such as the types and properties of waves, and in chemistry, such as atoms, molecules, and the conservation of mass. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

## **SCIENCE 5 A/B**

This course puts the emphasis on doing science. Students build their knowledge by crafting models, conducting experiments, creating terrariums, and making electromagnets. They learn about plant and animal cells and their functions, photosynthesis, and the roles of producers, consumers, and decomposers in an ecosystem. Students explore the global water cycle, the negative impacts of weather, and the relationship between weather and climate. They deepen their understanding of their home planet by investigating landforms, volcanic activity, the layers of the Earth's atmosphere and geosphere, the tilt of the Earth's axis, the impacts of its revolution around the Sun, and the Sun's role as source of energy for life on Earth. Students are introduced to elements as the basic substances of all matter and the relationship between matter and particles; they also encounter such core concepts of physics as energy transformation, gravitation, and Newton's first and second laws of motion. They design simple and parallel circuits and use the engineering design process to generate solutions to real-world problems. Finally, they conduct research, formulate questions, make predictions and observations, conduct fair tests using the scientific method, record their findings, and draw conclusions for future investigation. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

## **SOCIAL STUDIES 4 A/B**

This course introduces students to critical analysis, as they develop more detailed knowledge of U.S. and world history and the influence of individual perspectives on documents and events. Students assess and use a wide variety of primary and secondary sources to research compelling questions and present interpretations and arguments in both written and oral form, supporting their positions with details drawn from those reliable sources. They learn the rights and responsibilities of citizens and how people and groups can work together to accomplish common goals. Students also explore how regional differences in physical environment and culture affect how people live and work. This course fosters a command of the concepts and tools of geography, such as latitude, longitude, maps of various kinds, and scales. Students also gain an understanding of core aspects of economics, including resources, production, consumption, and international trade. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

## **SOCIAL STUDIES 5 A/B**

This course puts American history front and center, as students learn about the Native American civilizations of the Americas, the discovery of the New World by European explorers, the founding of the United States, westward

expansion, and the coming of the Industrial Revolution. Students leverage research skills to analyze historical events and documents, and they present their findings using arguments based on reliable sources with supporting facts. They refine their ability to distinguish fact from opinion in the context of historical investigation. Students also broaden their understanding of government by recognizing how the system of checks and balances works at both national and state levels, and they identify and interpret important songs and symbols of the United States. Civic responsibility is woven throughout the curriculum, and students recognize the value of public service and the traits of good leaders. Social Studies 5 also explores the themes, tools, and techniques of geography. Students learn how human interaction with the environment has caused change, both beneficial and detrimental, in the past and in the present. Finally, they learn how the U.S. economy functions, including the role of government and multinational organizations in domestic and international trade. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

## **SOCIAL STUDIES 6 A/B**

This course emphasizes an integrative approach to the teaching of geography through world cultures. Students are challenged to construct answers to political, economic, geographic, and social issues faced by contemporary countries through a case study approach.