



## **HIGH SCHOOL COURSE CATALOG**

**2019 - 2020 Catalog**  
**Michigan Math and Science Academy**

Course offerings are subject to change based on instructor availability and enrollment.

## Expect More

Dear Students and Parents,

Today, students and parents who live within the area have the power to choose a public high school. With that choice comes responsibility and opportunity: the responsibility to determine the best fit for you and your family, and the opportunity to select the best path for a successful future. We believe MMSA's high school program is the right choice on both accounts.

As you weigh your options, please take the time to learn what makes us different and discover how our curriculum and culture will prepare you to succeed in college, career, and life. Remember, MMSA is not a school for the gifted. Anyone is eligible to apply, regardless of race, socioeconomic status, or past school performance. That is the beauty: We do not choose our students — you choose us!

**High Expectations:** We believe all students should have the opportunity to attend and succeed at a four-year college. Our goal is 100 percent college acceptance, and students at the nearly 30 other charter schools managed by Concept Schools have achieved that objective three years in a row.

**Rigorous, College-Prep Curriculum:** A focus on science, technology, engineering, and mathematics (STEM), combined with innovative teaching methods and academic support programs, ensures you're ready to succeed in the college of your choice.

**Personal Attention:** Smaller class sizes, more one-on-one attention, and greater opportunities to get involved in classes, clubs, activities, and sports. Our extended school day and year provide more time to acquire the skills necessary to succeed in college. Research shows an extended school day consistently improves student performance — and it is a feature most common unsuccessful charter schools.

**Respect for Diversity:** Our core values include responsibility, integrity, effort, courage, curiosity, and respect — respect for diverse cultures and for one another. Together our students, teachers, parents, and administrators form a positive, dedicated team committed to results.

Academic achievement, leadership development, and college acceptance are the cornerstones of MMSA's high school program, as we strive to give every student the tools to realize their talents, achieve their goals, and fulfill their dreams. We hope you join us on our quest to be the best!

Sincerely, Oguzhan Yildiz, Superintendent

# English Curriculum

## Core Courses

- : **English I** This course builds upon students' prior knowledge of grammar, vocabulary, word usage, and the mechanics of writing and usually include the four aspects of language use: reading, writing, speaking, and listening. This course introduces and defines various genres of literature, with writing exercises linked to reading selections.
- : **English II** This course offers a balanced focus on composition and literature. Students learn about the alternate aims and audiences of written compositions by writing persuasive, critical, and creative multi- paragraph essays and compositions. Through the study of various genres of literature, students can improve their reading rate and comprehension and develop the skills to determine the author's intent and theme and to recognize the techniques used by the author to deliver his or her message.
- : **English III** This course uses representative literature selections from ancient and/or modern times from countries around the world. Students improve their critical-thinking skills as they comprehend the diversity of literary traditions and the influences of those traditions. Oral discussion is an integral part of literature courses, and written compositions are required.
- : **English IV** This course provides a survey of British literature and focuses on selected time frames of England's history. Students improve their critical-thinking skills as they determine the underlying assumptions and values within the selected works and as they understand how the literature reflects the society of the time. Oral discussion is an integral part of literature courses, and written compositions are required.

## Elective Courses

- : **College & Career Writing** is designed for seniors and builds upon previous writing skills. Reinforcing the logic and critical-thinking skills that

accompany good writing, this course — which emphasizes word choice, usage, and writing mechanics — provides continued and advanced instruction in writing for a variety of purposes and audiences. This course emphasizes college or business preparation; literature study is an additional component in which students analyze examples of several genres.

: **Journalism** is an introductory course that entails studying journalistic writing, terminology, and publication to complete journalism-related assignments. Students apply these skills and learn to use software to produce a student newspaper or newsletter. Emphasis is placed on developing critical-thinking skills by analyzing the news media and current events and by applying emphasized.

: **Reading-Writing Workshop** is designed to build upon previous reading and writing skills. This course seeks to develop the writing process and comprehension of reading passages. Students learn to understand reading passages and write persuasive, critical, and creative multi-paragraph essays and compositions. While emphasizing composition, this course also incorporates literature study to expose students to exemplary samples of various forms of writing.

: **Creative Writing** is a full-year course that focuses on developing creative writing skills through narrative and descriptive writing modes while concentrating on two genres: Short Story and Poetry. It offers students an in-depth study of the craft of writing and an opportunity to understand and apply various techniques and literary skills while they develop and expand their creative writing ability. Students are exposed to a broad scope of writings and authors. Students are given opportunities to participate in writing competitions.

: **College Readiness English** This course is designed for juniors and/or sophomores and builds upon previous writing skills. Reinforcing the logic and critical-thinking skills that accompany good writing, these courses — which emphasize word choice, usage, and writing mechanics — provide continued and advanced instruction in writing for a variety of purposes and audiences. This course emphasizes college or business preparation; literature study is an additional component in which students analyze examples of several genres.

: **AP English Literature and Composition** is an introductory college-level literary analysis course. Students cultivate their understanding of literature through reading and analyzing texts as they explore concepts like character, setting, structure, perspective, figurative language, and literary analysis in the context of literary works. (© 2019 The College Board) Students complete a College Board exam that can earn them college credits.

## Mathematics Curriculum

### Core Courses

: **Algebra I** This course includes the study of properties and operations of the real number system; evaluating rational algebraic expressions; solving and graphing first degree equations and inequalities; translating word problems into equations; operations with and factoring of polynomials; and solving simple quadratic equations.

: **Geometry** This course emphasizes an abstract, formal approach to the study of geometry, includes topics such as properties of plane and solid figures; deductive methods of reasoning and use of logic; geometry as an axiomatic system including the study of postulates, theorems, and formal proofs; concepts of congruence, similarity, parallelism, perpendicularity, and proportion; and rules of angle measurement in triangles.

: **Algebra II** This course's topics include field properties and theorems; set theory; operations with rational and irrational expressions; factoring of rational expressions; in- depth study of linear equations and inequalities; quadratic equations; solving systems of linear and quadratic equations; graphing of constant, linear, and quadratic equations; properties of higher degree equations; and operations with rational and irrational exponents.

: **Pre-Calculus** This course combines the study of trigonometry, elementary functions, analytic geometry, and mathematics analysis topics as preparation for calculus. Topics include the study of complex numbers; polynomial, logarithmic, exponential, rational, trigonometric, and circular functions, and their relations, inverses and graphs; trigonometric identities and equations; solutions of right and oblique triangles; vectors; the polar

coordinate system; conic sections; Boolean algebra and symbolic logic; mathematical induction; matrix algebra; sequences and series; and limits and continuity.

### **Elective Courses**

: **College Readiness Math** This course is designed for juniors and/or sophomores and builds upon previous mathematics skills. Reinforcing the basic skills needed for college.

: **Consumer Math** course reinforces general mathematics topics (such as arithmetic using rational numbers, measurement, ratio and proportion, and basic statistics) and applies these skills to consumer problems and situations. Applications include budgeting, taxation, credit, banking services, insurance, buying and selling products and services, home and/or car ownership and rental, managing personal income, and investment.

: **AP Calculus** AP Calculus AB is an introductory college-level calculus course. Students cultivate their understanding of differential and integral calculus through engaging with real-world problems represented graphically, numerically, analytically, and verbally and using definitions and theorems to build arguments and justify conclusions as they explore concepts like change, limits, and the analysis of functions. (© 2019 The College Board) Students complete a College Board exam that can earn them college credits.

## **Science Curriculum**

### **Core Courses**

: **Biology** This course is designed to provide information regarding the fundamental concepts of life and life processes. This course includes (but is not restricted to) such topics as cell structure and function, general plant and animal physiology, genetics, and taxonomy.

: **Chemistry** This course involves studying the composition, properties, and reactions of substances. This course explores such concepts as the behaviors of solids, liquids, and gases; acid/base and oxidation/reduction reactions; and atomic structure. Chemical formulas and equations and nuclear reactions are also studied.

: **Physics** This course involves the study of the forces and laws of nature affecting matter, such as equilibrium, motion, momentum, and the relationships between matter and energy. The study of physics includes examination of sound, light, and magnetic and electric phenomena.

: **Earth & Space Science** This course is designed to provide information regarding the study of space, geologic structures and forces, the waters on our planet, and the atmospheric forces that shape our world. Students will explore the Earth's spheres including the geosphere, hydrosphere, cryosphere, atmosphere, and the cycles of the Earth such as the water and carbon cycle. Students will learn about scientific inquiry, geologic time, space exploration, the solar system, and the universe.

### **Elective Courses**

: **AP Computer Science** This course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. (© 2014 The College Board)

: **Introduction to Engineering -- Project Lead the Way I** In this foundation Project Lead the Way (PLTW) Pathway to Engineering (Introduction to Engineering and Design, PLTW I) course; students are exposed to the design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. Students use 3D solid modeling design software to help them design

solutions to solve proposed problems and learn how to document their work and communicate solutions to peers and members of the professional community. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, documenting their work and communicating solutions to peers and members of the professional community. Art, English language arts, mathematics and science are reinforced. This course is an honors level course.

**: Principles of Engineering -- Project Lead the Way II** In this foundation Project Lead the Way (PLTW) Pathway to Engineering (Principles of Engineering and Design, PLTW II) course, students survey engineering and are exposed to major concepts they will encounter in a postsecondary engineering course of study. Students employ engineering and scientific concepts in the solution of engineering design problems.

## Social Studies Curriculum

### Core Courses

**: World History** focuses on world events from the 15th century Age of Enlightenment to the Cold War of the 20th century. The goal for this course is to gain a comprehensive understanding of major world events and the related impact on the development of global connections. Writing, both formal and informal, is a strong component of this course. Students prepare a formal research paper with a bibliography, as well as complete a social justice project and other related projects throughout the year.

**: U.S. History** focuses on the development of the United States, including 19th century industrialization into the Cold War, and concludes with the current century. Goals for this course are to gain an understanding of the connections between the United States and the rest of the world and the events that have shaped the country, as well as to develop a knowledge and appreciation of cultures. Students learn note-taking, studying, writing, researching, group cooperation, and higher-level thinking skills through this course. Students will analyze primary source documents and complete research projects to increase learning experiences.

: **Government & Economics** First semester focuses on political science, helping students gain an understanding of what government is and why it's necessary. The course focuses on how government has changed over time, how it's organized, and how it deals with issues facing our society today. Students learn how to participate in the democratic process through various means of instruction, participation in the election process, analysis of Supreme Court cases, and interactions with legislators. Second semester focuses on economic fundamentals, current events, history, and politics in an effort to better understand the theories of economics. Students refine basic skills, such as note taking, researching, organizing, studying, participating in class discussions, analyzing primary source documents, and working within a group.

### **Elective Courses**

: **Psychology** is a year-long course that investigates the way people think and behave. During the first semester, students learn the basic principles of psychology—including an introduction to the history and fields of psychology, psychobiology, development, sensation and perception, sleep and consciousness, learning, memory, language and intelligence, motivation, emotion, personality, adjustment and health, disorders, therapy, and social psychology. The second semester introduces the principles of sociology, including the history of sociology, socialization, social interaction, social institutions (marriage, family, gender, schools, religion, government, agricultural/industrial societies), social issues (child abuse, stereotyping, mental illness, cults, crime, poverty), and culture.

: **AP Psychology** is an introductory college-level psychology course. Students cultivate their understanding of the systematic and scientific study of human behavior and mental processes through inquiry-based investigations as they explore concepts like the biological bases of behavior, sensation and perception, learning and cognition, motivation, developmental psychology, testing and individual differences, treatment of abnormal behavior, and social psychology. (© 2019 The College Board) Students complete a College Board exam that can earn them college credits.

: **Citizenship & Geography** covers geographic characteristics, geographic changes, and geographic movement. Students study cultural perspectives, cultural oppression, discrimination, and conflict, as well as cultural exchanges. Students also learn about the evolution of the Constitution, forms of

government, people achieving governmental change, and individual rights and the common good.

: **AP World History** is an introductory college-level modern world history course. Students cultivate their understanding of world history from c. 1200 CE to the present through analyzing historical sources and learning to make connections and craft historical arguments as they explore concepts like humans and the environment, cultural developments and interactions, governance, economic systems, social interactions and organization, and technology and innovation. (© 2019 The College Board) Students complete a College Board exam that can earn them college credits.

: **AP U.S. History** is an introductory college-level U.S. history course. Students cultivate their understanding of U.S. history from c. 1491 CE to the present through analyzing historical sources and learning to make connections and craft historical arguments as they explore concepts like American and national identity; work, exchange, and technology; geography and the environment; migration and settlement; politics and power; America in the world; American and regional culture; and social structures. (© 2019 The College Board) Students complete a College Board exam that can earn them college credits.

## Fine Arts Curriculum

: **Art I** is a studio class in which students will learn how to create art using various media using the elements and principles of design. This is a course that gives a taste of different art making skills from 2-D to 3-D. Students are required to attempt and finish each assignment to the best performance of their own skills. Students will be collaborating on a few projects but the majority will be individual based. Students must also learn art terms, concepts, and the art of critiquing as well as take pre- and post-evaluation tests. Individual rubrics for each project will be given as the project is introduced. Use your brain, make it yours, & make it say something about you or our world, society, culture. Hold on to your work. Students will build a portfolio of work to be used for shows, and entrance to Art II.

: **Art II** This advanced level of art-making includes more in-depth units in figure drawing, design, installation, murals, oil painting, printing, sculpture,

self-explorative works, competition work, and understanding modern ways of art-making. For the serious and self-motivated art student. Art II is a studio class in which students will learn how to further develop their creativity in art using various media. This is a course that builds upon Art I art making skills from 2-D to 3-D and includes more in-depth study or more difficult medium of each category as well as a few new items. Students are required to attempt and finish each assignment from research and idea phase to final project. Students will have homework and will receive some of their own supplies. We will be collaborating on some projects but the majority will be individual based. We will be creating a lot of work for certain competitions in this class, and students are encouraged to participate in class field trips for a greater understanding of the art experience.

: **Art III** is an independent study studio experience in which students further develop their portfolio for entrance into a college art major field of study. Only the self-motivated, artistic career seeking student should enter this class. Students will work independently, meet deadlines, and extend their art-making skills and knowledge through projects in various media. Students will develop their own personal style. This course builds from Art II in 2-D and 3-D, including a more in-depth study of each. Students are required to finish each assignment from research and idea phase to final project. Students will also take part in any competitions that Art II will enter. Also, the yearly school mural will be created mostly by Art III students.

: **AP Art** AP Drawing is an introductory college-level drawing course. Students refine and apply skills and ideas they develop throughout the course to produce drawings. AP 2-D Art and Design is an introductory college-level two-dimensional design course. Students refine and apply skills and ideas they develop throughout the course to produce two-dimensional art and design. AP 3-D Art and Design is an introductory college-level three-dimensional design course. Students refine and apply skills and ideas they develop throughout the course to produce three-dimensional art and design. (© 2019 The College Board) Students submit a portfolio to College Board that can earn them college credit.

: **Art Appreciation & Music Appreciation** are two semester long courses taken consecutively that can serve as an alternative to the more performance based courses. Students will learn about the history of art and music, with only small performance tasks required.

: **Beginning Band** is designed to provide students with an introductory experience in playing a band instrument. The curriculum for this course is an

extension of the skills and concepts introduced in general music classes. Prior instrumental music experience is not required. Students are required to attend concerts.

: **Concert Band** is a more advanced level course for students who successfully complete Beginning Band and want to pursue further experience developing their talent in playing an instrument and performing pieces with the band. Students are required to attend concerts.

: **Symphonic Band** is the most advanced level for band students who have successfully completed Concert Band. Students are required to attend concerts.

: **Folk Dance** This course introduces students to famous folk dances from different regions of the world showing the cultural aspects and traditional values of this multi-cultural society. History, the birth of the region according to the classification, naming, scene arrangement, folk dance music and clothing will be discussed in the lesson. Students will be preparing for folk dance competitions.

## Technology Curriculum

: **Microsoft Office** is designed to build students' skills in the use of computer-based tools in any general field or activity. The students will learn the principles of a disk-based operating system as well as the fundamentals of using a word processor, spreadsheet, presentation, publisher and database programs. This course designed for those students interested in building and practicing fundamental computer skills and Microsoft software applications. We will be reinforcing the fundamentals of the MS Office Suite. This course will provide the necessary training to prepare interested students in participating in the MOS Certification (Microsoft Office Specialist).

: **Web Page Design** is designed to develop students' ability to create web pages using various tools. Also student will learn dynamic web design using

ASP.

## Physical Education Curriculum

: **Physical Education & Health** are two semester long courses taken consecutively. Physical Education classes are designed to practice and develop skills in activities that will help students maintain fitness throughout their life. Students will understand the benefits that regular exercise can provide for a person's mental, physical, and social health. The Health course is designed to inform students about behaviors that contribute directly to optimal health and reducing the risk of disease. Key concepts and topics include mental and emotional health, substance abuse prevention, nutrition and physical activity, and HIV/AIDS education.

: **Team Sports** is designed for students interested in learning skills and strategies of team sports. Sports may include, but are not limited to: basketball, flag football, soccer, ultimate frisbee, pickleball, badminton, and volleyball. This course will also include daily cardiovascular fitness.

## Foreign Language Curriculum

: **Spanish I** is designed to introduce students to Spanish language and culture. Spanish I course emphasizes basic grammar and syntax, simple vocabulary, and the spoken accent so that students can read, write, speak, and understand the language at a basic level within predictable areas of need, using customary courtesies and conventions. Spanish culture is introduced through the art, literature, customs, and history of Spanish-speaking people.

: **Spanish II** is designed to build upon the skills developed in Spanish I, extending students' ability to understand and express themselves in Spanish and increasing their vocabulary. Typically, students learn how to engage in discourse for informative or social purposes, write expressions or passages that show understanding of sentence construction and the rules of grammar, and comprehend the language when spoken slowly. Students usually explore the customs, history, and art forms of Spanish-speaking people to deepen their understanding of the culture(s).

: **Turkish I** is designed to introduce students to Turkish language to beginning students, to develop oral and written skills for both comprehension and expression. Language skills to be emphasized include: understanding, reading, writing, translation, and speaking. Turkish I course emphasizes basic grammar and syntax, simple vocabulary, and the spoken accent so that students can read, write, speak, and understand the language at a basic level within predictable areas of need, using customary courtesies and conventions.

: **Turkish II** course is a continuation of Turkish I. It is designed to improve different aspects of language and writing skills for the second semester students. Objectives are: to improve students' conversational skills, to provide a variety of readings for written comprehension; to develop a good grammar background; to improve listening skills; to introduce students to some examples of Turkish culture.

Michigan Math and Science Academy opened in August, 2009.

As a charter school, MMSA is an independent public school open to all students in the area, regardless of academic achievement, race, or economic background. There are no entrance exams or tuition.

MMSA is managed by Concept Schools, a charter management company that operates 30 highly successful charter schools throughout the Midwest.

Questions? Please call 586-353-2108 or email [info@mmsaonline.org](mailto:info@mmsaonline.org).

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