



## ADVANCE PROGRAM FOR YOUNG SCHOLARS 2022 COURSE DESCRIPTIONS

*Information about the Admissions Policy and Eligibility Requirements can be found on pages 6 - 7.*

### ALGEBRA 1

This course will serve as a foundation for students' higher-level math courses. In Algebra I, students learn skills and concepts that are necessary for subsequent math courses. The pace will be fast, and expectations will be high. The course will cover material comparable to what is seen in a traditional high school classroom, closely matching the academic standards posted by the Louisiana Department of Education. Daily activities will include lectures/discussions of topics, independent/group activities to practice concepts, feedback from the instructor and teaching assistant, and MathXL assignments.

Students completing this course will be able to use their algebra and critical thinking skills to model real life situations through a variety of tools. Topics to be covered will include linear equations and inequalities in one and two variables, solving systems of equations, functions and transformations, quadratic equations, zeros and factors of polynomials, exponents and exponential functions, piecewise-defined functions, and rational expressions and equations. TI-NSPIRE CX graphing calculator is required for the course. **Admission Requirements:** *To view our Admissions Policy visit <http://advance.nsula.edu/eligibility/>.*

### ALGEBRA 2

In this course, students will engage in an in-depth study of functions. Quadratic, polynomial, rational, radical, exponential, periodic, and logarithmic functions will be explored graphically and algebraically. Conic sections, matrices, and parametric equations will also be introduced. Algebra 2 emphasizes mathematics as a language through which real world problems will be addressed, analyzed, and solved. A graphing calculator, preferably a TI-83 or TI-84 Plus, is required for this course. **Admission Requirements:** *Visit <http://advance.nsula.edu/eligibility/> to view our Admissions Policy. Students must have completed algebra 1 and geometry in school or at ADVANCE. **Note:** This course may be eligible for articulated college credit at Northwestern State. See Articulation Agreement under Academics.*

### BIOLOGY

What are some properties of living matter that separate it from non-living matter? Are all physical and chemical reactions the same inside vs. outside of a living matter? Can we take control of these physical and chemical reactions so that we can become "faster, higher, stronger"? What other factors may contribute to the properties of living things?

If you want to know the answers to some or all of these questions, enroll in biology. This course will help participants build upon a foundation of life's defining characteristics and use analytical skills to develop an in-depth appreciation of fundamental principles of biology through stimulating classroom instruction, hands-on experience, as well as social activities.

Topics to be covered will include cells and cellular components, genes and their role in life, diversity of life forms and evolution, anatomy and physiology, and basic tools to explore biological systems. By taking this course, participants will expand their scientific knowledge base as they make connections across concepts and become more informed citizens by exploring current events through a scientific lens. Laboratory work will be an integrated part of the class, including conducting experiments and analyzing the results. **Admission Requirements:** *To view our Admissions Policy visit <http://advance.nsula.edu/eligibility/>. Students must have completed algebra 1 in school or at ADVANCE. **Lab Fee:** There is an additional \$50 lab fee for this course that must be included with the final payment. **Note:** This course may be eligible for articulated college credit at Northwestern State. See Articulation Agreement under Academics.*



## BRAIN AND BEHAVIOR BUFFET - 2B BUFFET: WHERE WE SERVE AUTHENTIC PSYCHOLOGY

Psychology is the science of behavior and mental processes. To understand the psychology of human beings, the students will be learning some physiology first, including brain structure and function, five senses and function, Endocrine system, and how drugs affect both physiology and psychology of human beings.

The Brain and Behavior Buffet course (2B Buffet) is designed to trigger students' minds with questions about who they are, how do they behave, why do they behave in a certain way, can they change their behavior, can they change their personality, can they learn new things easily, and can they memorize material quickly. 2B Buffet will serve the students with a special menu of topics including the brain, human nature, state of consciousness, motivation, emotion, learning, memory, intelligence, personality, human development, psychological disorders, and therapies. 2B Buffet will be spiced by classic psychology experiments, fields of psychology, and research in psychology. 2B Buffet will be incomplete if students will not taste three different kinds of dessert; how to relax, how to have hope, and how to be positive!

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## CHEMISTRY

Have you ever wondered how a car battery works? What makes a plastic cup different from one made of glass? Where helium balloons go when they float away? Why baking soda and vinegar combine into a volcano, but baking powder just makes a mess?

These questions and more can be answered through the science of chemistry. From reactions to electrochemistry, from gas laws to molecular structure, students will learn and apply the equivalent of a year-long sequence in chemistry through both written assignments and lab work. Major topics covered will include: chemical nomenclature and structure, the periodic table and periodic trends, reaction classification and stoichiometry, ideal gases and intermolecular forces, and nuclear, thermo-, and electrochemistry. Additionally, students will practice practical knowledge and skills for science disciplines, such as unit conversions, scientific notation, and significant figures, both as lecture topics and applications in a variety of laboratory sessions. A scientific calculator, such as one from the TI-30 series, is required for the class. Graphing calculators are permitted, but certainly not required. **Admission Requirements:** Visit <http://advance.nsula.edu/eligibility/> to view our Admissions Policy. Students must have completed algebra 1 and either physical science or biology in school or at ADVANCE. **Lab Fee:** There is an additional \$50 lab fee for this course that must be included with the final payment. **Note:** This course may be eligible for articulated college credit at Northwestern State. See Articulation Agreement under Academics.



## THE CONSTITUTIONAL CONVENTION AND ERA OF ALEXANDER HAMILTON



In the 1780s the infant United States was on brink of destruction. Economically, politically, and diplomatically weak – the world’s “ugly duckling” foundered principally because of the inefficiencies and weakness of the national government. No one recognized the perilous situation more than the Caribbean immigrant, soldier, economist, and founding father Alexander Hamilton. A veteran of the American Rebellion, Hamilton became instrumental in the efforts to give the central government more power. In the spring of 1787 Hamilton and delegates from twelve of the states gathered in Philadelphia and produced a new federal constitution. But was the radical document the best solution for the nation? Did it take power away from the states as well as the people? And where were the protections for individual rights and liberties?

Our class will be not only an extended study of Hamilton but the times he lived in. Why should we study a person who died more than two centuries ago? Can his life and the struggles of the early nation teach us about modern society? Finally, what did the musical *Hamilton* get right and wrong about the gentleman on the ten-dollar bill? The course will combine reading, with classroom lessons, movies, documentaries, and gaming activities. Students will be assigned to play real delegates who attended the 1787 Convention, and role play in discussions based on your representative’s background and experience.

Delegates of the states – time is of the essence! Make your way to Philadelphia and prepare to debate the new framework of government. Will you support the new federal union or stay on the side of the confederation? **Admission Requirements:** To view our Admissions Policy visit <http://advance.nsula.edu/eligibility/>. **Note:** This course may be eligible for articulated college credit at Northwestern State. See Articulation Agreement under Academics.

## CREATIVE WRITING

In Creative Writing, students will be challenged to write daily, producing a body of work that will include poems in numerous styles, and at least one completed short story, as well as personal narratives.

In class the students will be given exercises to stimulate and develop their writing skills and their critical thinking about both writing and reading literature. These exercises and the longer assignments that evolve from them should be enjoyable for any student who likes to write or thinks he or she might have things to say and experiences to communicate. We will use both a poetry text and a fiction text to create a body of shared examples and models, and to analyze and enjoy the craft of exemplary writers. We will spend a lot of time talking about these models and about the work each student produces. Some of our discussion will take place within the framework of a more formal ‘workshop,’ in which every student will offer critiques of every other student’s work. We will explore craft, as well as the more elusive idea of art, and focus on the enrichment of the astonishing human gift of language. We will read aloud to one another, and produce an anthology of work completed in the class. **Admission Requirements:** To view our Admissions Policy visit <http://advance.nsula.edu/eligibility/>. **Note:** This course may be eligible for articulated college credit at Northwestern State. See Articulation Agreement under Academics.



## FILM STUDIES - GREAT DIRECTORS

This course will examine the craft of film directing and authorship through close analysis of the films of an array of directors belonging to the canon of "greats", from Buster Keaton to Taika Waititi.

Through discussion of the films, as well as critical and creative writing, students will learn and apply aspects of film theory, technique and history, principles of screenwriting and storytelling, and fundamentals of cinematic composition and production to better understand the purpose and artistic mastery of the film director. Students will also learn and apply sophisticated techniques of text-based criticism and argumentation, studying acclaimed essays on directing cinema and writing critical essays of their own.

Finally, the course will culminate in a collaborative film project, giving students first-hand, practical experience with the elements they have studied and setting them on their way to becoming skilled and thoughtful directors themselves.

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## GEOMETRY

The ADVANCE geometry course is designed for students with high interest and ability in mathematics. Students will examine concepts of plane geometry, including definitions, points, lines, planes, angles, triangles, quadrilaterals, polygons, theorems, and postulates associated with those concepts. Students will also study solids such as cylinders, spheres, cones, and polyhedra. Various teaching methods will be used, including instructional technology, so students should have basic computer skills at minimum. Students must bring a scientific calculator with them to ADVANCE (with the capability for calculating sine, cosine, and tangent abbreviated as sin, cos, and tan). A TI-30XIIS is preferred, but any scientific calculator is acceptable.

**Admission Requirements:** To view our Admissions Policy visit <http://advance.nsula.edu/eligibility/>. Students must have completed algebra 1 in school or ADVANCE.

## PHYSICS

Why does the Earth orbit the Sun? What causes ocean tides? What is electricity? Physics attempts to explain these and many other questions using only a few basic principles.

The course will cover topics in Mechanics, Electricity, and Magnetism. Specific topics include motion in one and two dimensions, force and Newton's Laws, energy conservation, momentum conservation, torque and rotational motion, periodic motion including springs, static and dynamic charge, circuits, magnetism, optics and properties of light. Students will perform hands-on, inquiry-based lab activities using Pasco® equipment and computer interfaces. Students must bring a graphing calculator, either a TI-83 or TI-84, a ruler, and a composition notebook to ADVANCE. **Admission Requirements:** Visit <http://advance.nsula.edu/eligibility/> to view our Admissions Policy. Students must have completed algebra 1 and algebra 2 either in school or at ADVANCE. Geometry is strongly recommended and trigonometry would be helpful, but is not required. Students who have had calculus will be accommodated and thus expected to incorporate calculus into their assignments where appropriate.

## LEARNING PYTHON THROUGH GAME PROGRAMMING

Although this course cannot cover creating PS4 equivalent video games, if you aspire to move from game player to game creator, it all starts with learning the fundamentals of programming and game-programming basics. Python is a language that is easy to learn and introduces graphics from the very beginning. The topics covered will include types, variables, standard I/O, branching, looping, strings, arrays, functions, graphics, and importing files. This course will accept students with no previous programming experience as well as students with some knowledge of a programming language. Students who enrolled in Python at ADVANCE in previous summers can continue incorporating graphics into their programs. We will use a different online text for each level so that all students will be challenged, and no students will be left behind. **Admission Requirements:** To view our Admissions Policy, visit <http://advance.nsula.edu/eligibility/> to view our Admissions Policy. Students must have completed algebra 1 in school or at ADVANCE.



## SHAKESPEARE IN PERFORMANCE

This course begins with *Romeo and Juliet* because everyone teaches it wrong. If you have already covered it in class or simply exist in the world and so know the story, you will find that there is a lot more to uncover and enjoy about this classic romantic comedy gone wrong. It is also the perfect play to demonstrate that understanding the historical context of Renaissance England and the practices of the Elizabethan Playhouse can dramatically change how you read a story. This crash course in theatre history will immerse you in the language of the Renaissance until iambic pentameter and thee's and thou's feel natural and powerful. Like *R&J*, the other two plays, *Twelfth Night* and *The Winter's Tale* show Shakespeare experimenting with genre by pushing comedy into tragedy and tragedy into comedy. These complex interesting plays are full of fun but also deep and profound meaning that likely explains their survival to the present day. Come to see Shakespeare knocked off his lofty perch and learn why his works still have so much to teach us today.

Classmates will participate in performing selected excerpts from the plays. **Admission Requirements:** Visit <http://advance.nsula.edu/eligibility/> to view our Admissions Policy. **Note:** This course may be eligible for articulated college credit at Northwestern State. See Articulation Agreement under Academics.



## ADMISSIONS POLICY

All applicants must provide the following documents with their application:

1. A copy of the applicant's most recent report card.
2. A copy of the applicant's most recent state standardized test scores. If scores have been misplaced, many schools provide that information on school transcripts, and transcripts may be submitted to ADVANCE.

Louisiana applicants:

Louisiana applicants who earn LEAP achievement levels of Advanced or Mastery in the subject area that corresponds to the desired ADVANCE class and submit a satisfactory report card will be accepted to the program.

Louisiana applicants who earn LEAP achievement levels of Basic, Approaching Basic, or Unsatisfactory in the subject area that corresponds to the desired ADVANCE class will be required to submit two examples of outstanding schoolwork, and a teacher must email the ADVANCE office stating why they recommend the student as a candidate for the program.

Texas applicants:

Texas applicants who earn STAAR performance standards of Masters or Meets in the subject area that corresponds to the desired ADVANCE class and submit a satisfactory report card will be accepted to the program.

Texas applicants who earn STAAR performance standards of Approaches or Did Not Meet in the subject area that corresponds to the desired ADVANCE class will be required to submit two examples of outstanding schoolwork, and a teacher must email the ADVANCE office stating why they recommend the student as a candidate for the program.

Applicants from other states:

Contact the ADVANCE office at 318-357-4500 or [palmerh@nsula.edu](mailto:palmerh@nsula.edu).



## FOR STUDENTS WHO HAVE TAKEN AN ACT OR SAT

If applicants have taken an ACT or SAT and their scores meet those shown in the chart below, they may submit those scores along with a copy of their most recent report card with their application. Applicants will be notified if state standardized test scores and teacher recommendations are needed.

The left side of the chart below indicates qualifying scores for students who took an ACT or SAT while in the 7th grade. If students achieve the required scores while in 7th grade, they do not have to retake the test to apply to ADVANCE in future years.

The right side of the chart indicates qualifying scores for students who took an ACT or SAT while in 8th – 11th grades.

Students qualify for specific courses based on their scores on subsections of the ACT or SAT. For example, **\*Students who submit ACT scores** and wish to enroll in a math, science, or technology course at ADVANCE should qualify with either their ACT math or science score. Students who wish to enroll in a humanities course should qualify with either their ACT English or reading score.

**\*\*Students who submit SAT scores** and wish to enroll in a math, science, or technology course at ADVANCE should qualify with their SAT math score. Students who wish to enroll in a humanities course should qualify with their SAT EBRW score.

Abbreviations for the ACT qualifying scores include E = English; M = Math; R = Reading; S = Science. Abbreviations for the SAT qualifying scores include EBRW = Evidence-Based Reading and Writing; M = Math.

ADVANCE QUALIFYING SCORES	
IF TEST TAKEN IN GRADE 7	IF TEST TAKEN IN GRADES 8, 9, 10, or 11
<p>Students must meet at least one of the following:</p> <p><b>*ACT</b>                      E &gt; 20                      M &gt; 18                      R &gt; 20                      S &gt; 20</p> <p>Or a combination of:                      M &gt; 17 and E &gt; 19                      M &gt; 17 and R &gt; 19</p>	<p>Students must meet at least one of the following:</p> <p><b>*ACT</b>                      E &gt; 22                      M &gt; 20                      R &gt; 22                      S &gt; 22</p> <p>Or a combination of:                      M &gt; 19 and E &gt; 21                      M &gt; 19 and R &gt; 21</p>
<p><b>**SAT</b>                      EBRW &gt; 510                      M &gt; 500</p>	<p><b>**SAT</b>                      EBRW &gt; 540                      M &gt; 520</p>