



**High School
Program of Studies
Course Title, Credit, and Prerequisite
2024-2025**

Introduction:

These courses represent the totality of offerings at the Einstein School. Their inclusion does not mean they are offered every year; many are based on student interest and/or minimum enrollment in the class. Please note that courses listed as 1.0 credit hours are required full year courses (fall & spring). Contact us if you have a question regarding the availability of particular classes.

Courses that can be taken with an Honors option are denoted with an “H” after the course name. Courses marked with “HW” indicate that the class is automatically taught at Honors level with no opt-out option. Honors level courses are scored on a 5.0 GPA scale; others are on a 4.0 scale.

English Department

English I – Literary Foundations (H)

Credit: 1.0

Prerequisite: None

This course surveys genres and texts from around the globe. Students examine a variety of literary viewpoints and explore the different choices authors make as they present their narratives. This course also surveys grammar and morphology to introduce students to the structural rules that govern the English language. By the end of this course, students should be comfortable diagramming sentences, drafting expository essays, and analyzing literature for deeper meaning.

English II – World Literature (H)

Credit: 1.0

Prerequisite: English I

English II traces the development of World Literature from its origins in ancient Mesopotamia to the contemporary era. As students read and analyze canonical texts examining physical and metaphysical journeys, they continue to refine their academic writing by incorporating increasingly complex stylistic and rhetorical elements.

English III – American Literature (H)

Credit: 1.0

Prerequisite: English II

For such a young country, the United States has produced a rich body of literature to capture and define a distinctly American identity. In this course, students study a broad overview of American literature from its humble colonial roots to selected contemporary works. This course examines the history of the United States and its cultural identity as presented in its literature. Different approaches to literary analysis and the tools required for effective composition are discussed, and students learn to incorporate these in their writing.

English IV – British Literature (H)

Credit: 1.0

Prerequisite: English III

When discussing British literature, it is important to acknowledge that it spans nearly a millennium; in essence, the study of British literature is the study of the English language as we know it. In this course, we examine British literature beginning with some of the earliest written works in the English language, culminating in more recent works. Different approaches to literary analysis and the tools required for effective composition are discussed, and students learn to incorporate these in their writing.

Structured English (H)

Credit: 1.0

Prerequisite: None

This course surveys grammar and morphology to introduce students to the structural rules that govern the English language. By the end of this course, students should be equally comfortable diagramming sentences, drafting expository essays, and analyzing literature for deeper meaning.

Mathematics Department

Algebra I (H)

Credit: 1.0

Prerequisite: Pre-Algebra

In Algebra I, students begin to apply abstract mathematical thinking to different types of equations. Algebra I is the steppingstone to all subsequent Math courses. Consequently, students must master the foundation of all properties of rational numbers and mathematical patterns that exist between rational numbers, equations, and inequalities to perform simple to complex formulas and systems of equations. Understanding mathematical concepts is imperative at this stage; therefore, students must be able to process these learning targets theoretically.

Geometry (H)

Credit: 1.0

Prerequisite: Algebra I

Geometry introduces the concept of formal reasoning in the context of familiar entities, points, lines, shapes, solids. It furthers the study of angles, polygons, proof, similarity, and scale. It also introduced trigonometry. These skills and concepts are crucial for subsequent math classes.

Algebra II (H)

Credit: 1.0

Prerequisite: Algebra I

The objectives of Algebra II include further development and refinement of algebra skills. Specifically, students learn to add, subtract, multiply, divide, factor and simplify expressions of linear, quadratic, higher-order polynomial, radical, rational exponents, exponential functions, and logarithmic forms. Additionally, students learn to graph and translate functions of the above types and continue to develop efficiency and accuracy in their algebraic mechanics.

Precalculus (H)

Credit: 1.0

Prerequisite: Geometry, Algebra II

The purpose of this course is to deepen students' algebraic and trigonometric fluency and extend their ability to make connections between the different branches of mathematics presented therein. This course's primary focus is preparing students for Calculus by continuing to introduce all its necessary ingredients and buttressing concepts covered in less depth in previous courses.

Calculus (HW)

Credit: 1.0

Prerequisite: Pre-Calculus

Calculus prepares students for the rigors of college mathematics. This course explores the fundamentals of Calculus in depth and teaches students to intuit the mathematics of optimization and summation as it provides a solid foundation for further study.

Advance Geometry (HW)

Credit: 1.0

*Prerequisite: Geometry, Algebra II,
or Teacher Recommendation*

The objectives of Geometry II include further development and refinement of formal logic, trigonometric skills, and generalization skills. Specifically, students will prove the entire body of proofs for all the theorems introduced in Geometry. They will deepen their knowledge of trigonometry and prove trigonometric identities. These tools are then used to solve complex problems and develop generalized solutions for those problem types.

Calculus II (HW)

Credit: 1.0

Prerequisite: Calculus

Calculus II picks up where Calculus leaves off and continues as far as the students can go. Minimum topics are further techniques of integration, including integration by parts, partial fraction decomposition, trigonometric techniques of integration, improper integrals, and generalizing integrals by types and learning to recognize how substitutions can be used to simplify seemingly impossible integrals. As time allows, further topics include sequences and series, an in-depth discussion of the natural number e and its properties, partial derivatives, derivatives and integrals in other coordinate systems, and line and surface integrals. Ambitious groups may encounter the beginnings of multivariable calculus (traditionally a Calculus 3 topic).

College Algebra (H)

Credit: 1.0

Prerequisite: Algebra II

This course prepares students for post-secondary mathematics by introducing them to advanced algebraic concepts. Students study the same applications they will encounter in college: polynomials, rational numbers, radicals, absolute value, exponential and logarithmic functions, equations, inequalities, graphing skills, and systems of equations using matrices.

Statistics (H)

Credit: 1.0

Prerequisite: Algebra II

Statistics allows students to broaden their understanding of data analysis and variability by applying algebraic reasoning developed in earlier courses to make sense of statistical processes. Students become statisticians through the study of sampling and experimentation, categorical and quantitative data, probability and random variables, inference, and bivariate data.

Statistics Using Excel (H)

Credit: 1.0

Prerequisite: Geometry, Algebra II

This course teaches statistics from basic to advanced level to solve workplace problems using Microsoft Excel. Students learn to make sense out of vast amounts of data around them and to make quantitatively justifiable conclusions and decisions. In addition to statistics, students learn

to model financial and mathematical optimization problems as well as integrate multiple sources of data into meaningful information.

Science Department

Integrated Physics and Chemistry (9th Grade and above)

Credit: 1.0

Prerequisite: None

Integrated Physics and Chemistry is an excellent course to take to develop basic concepts of both physics and chemistry. Topics covered are introduction to chemistry, measurement, matter and change, atomic structure, electrons in atoms, the periodic table, chemical nomenclature, ionic and metallic bonding, covalent bonding, chemical reactions, water, thermochemistry, nuclear chemistry, motion, forces, momentum, energy, universal gravitation, static electricity, electrical circuits, waves, and energy transfer.

Integrated Physics and Chemistry (7th Grade & 8th Grade)

Credit: 1.0

Prerequisite: None

This course introduces basic principles of physics and chemistry by acquainting students with the foundational knowledge they will need for all subsequent physical science courses. Using hands-on experiments and projects, students investigate concepts and phenomena such as kinematics, forces, energy, momentum, waves, electricity, atomic structure, the periodic table, electronic configuration, ionic compounds, chemical reactivity, as well as properties of and changes in matter.

Biology (H)

Credit: 1.0

Prerequisite: None

Biology is the study of living things and how they interact with the world around them. Biology is an integral and vital building block of any student's future endeavors because everything on Earth is related to biology. Students take a deep dive into the components of biology. They learn these components through many methods such as classroom discussions, research, hands-on activities, labs, and virtual field trips. The skills students learn here set them up for success at the Einstein School and their future beyond it.

Biology II: Essential Elements of Biology (HW)

Credit: 1.0

Prerequisite: Biology

This course surveys biological history and literature, instrumentation, and current trends in biological sciences for peer review presentations. This class is designed to help budding biologists become more comfortable with scientific applications by allowing students to clarify their own ideas as they explain them to classmates and expand their critical thinking. We discuss morphology, anatomy, growth, life cycles, ecology, behavior, classification, the uses of organisms, human systems, and tissues and mechanisms of heredity and metabolism.

Anatomy and Physiology of Human Systems (HW)

Credit: 1.0

Prerequisite: Biology, Chemistry

Anatomy and Physiology is the study of the structure and function of the human body. Laboratory experiences and text-based activities provide learning in the following topics: the major body systems, how these systems interact to maintain homeostasis, bodily functions in healthy and diseased states, blood types, muscle action, cranial nerve functioning, and bioethics. This course is designed for students who have taken biology and wish to further their study.

Chemistry (H)

Credit: 1.0

Prerequisite: Biology, Algebra I

As the study of matter, chemistry topics include characteristics of matter, energy transformations during physical and chemical changes, atomic structure, the periodic table of elements, behavior of gases, bonding, nuclear fusion and fission, oxidation-reduction reactions, chemical equations, properties of solutions, acids and bases, and chemical reactions.

Chemistry II (HW)

Credit 1.0

Prerequisite: Chemistry, Algebra II

Chemistry II begins where Chemistry I ends, extending the topics learned therein to applications and new concepts. Material includes a deeper look at solutions, molarity, molality, freezing point elevation and boiling point depression, acidity, basicity, and pH, reaction rates and equilibrium, oxidation-reduction reactions, galvanic cells, reaction orders and theory, kinetic theory and VSEPR, thermodynamics, and hydrocarbon chemistry. If time allows, introductory organic chemistry may be covered.

Conceptual Physics

Credit: 1.0

Prerequisite: Algebra I

In this class, students successfully develop critical thinking skills for making informed decisions. By providing a solid foundation of knowledge in physics, students gain an understanding of the scientific method and research skills to evaluate a variety of sources and information. Students learn how the physical world works, and how forces, motion, heat, energy, waves, and electricity work as they pertain to real life. Students have the opportunity to participate in an off-campus Physics-related experience to enhance the class curriculum.

Physics I (H)

Credit: 1.0

Prerequisite: Algebra I

In Physics, students learn about the structure of the physical world and how its constituent parts interact with each other. Students explore the behavior of matter, motion in one and two dimensions, force, energy, fluids, thermodynamics, oscillations, elasticity, and electromagnetism, and employ a variety of tools and mathematical models to conduct experiments showing how these functions operate in real life. Students have the opportunity to participate in an off-campus Physics-related experience to enhance the class curriculum.

Physics II (HW)

Credit: 1.0

Prerequisite: Physics or Calculus

The objective of this course is manifold. It is primarily meant for the budding scientist or engineer to become comfortable and fluent with the mathematical nature of advanced technical science. The mathematics involved is rigorous and often requires calculus. As such, an early unit introduces the basics of calculus so that further physics that relies on it can be undertaken (this is a boon to anyone concurrently enrolled in calculus). Another objective of the course is to show the student the wonder of our Universe, the equations and concepts that have been discovered to describe it, and the power they can wield as experts in those concepts. Students have the opportunity to participate in an off-campus Physics-related experience to enhance the class curriculum.

Environmental Science

Credit: 1.0

*Prerequisite: Biology, Chemistry,
Algebra I*

This course provides students with the scientific principles, concepts, and methodologies required to understand the natural sciences in an interdisciplinary context. Various aspects of biology, earth and atmospheric sciences, fundamental principles of chemistry and physics, human population dynamics, and an appreciation for the Earth and its natural resources are featured. Students study topics such as energy and Earth's cycles, stability and change in ecosystems, and humanity's effect on ecosystems.

Environmental Systems (HW)

Credit: 1.0

Prerequisite: Environmental Science

This advanced course provides students with in-depth surveys into environmental systems. Technical aspects such as dams, energy solutions, erosion, temperature regulation, and meteorology are discussed.

Forensic Science (H)

Credit: 1.0

Prerequisite: Biology, Chemistry

Forensic Science uses a structured and scientific approach to the investigation of crimes of assault, abuse, neglect, domestic violence, accidental death, homicide, and the psychology of criminal behavior. Students learn terminology and investigative procedures related to crime scenes, questioning, interviewing, criminal behavior characteristics, truth detection, and scientific procedures used to solve crimes. Using scientific methods, students perform fingerprint analysis, ballistics, and blood spatter analysis on evidence collected from simulated crime scenes. Students also learn the history, legal aspects, and career options for forensic science.

Forensic Science II (HW)

Credit: 1.0

Prerequisite: Forensics Science I

This course reflects the Forensic Science I course but includes more in-depth topics of arson and fire investigations, ballistics, explosions, autopsy, physiology of alcohol and poisons (toxicology), advanced studies of DNA, forensic odontology, entomology, crime scene reconstruction, cyber-crimes, and criminal profiling.

Aerospace Engineering (HW)

Credit: 1.0

Prerequisite: Geometry, Algebra II

This course focuses on the study of the engineering discipline which develops innovative technologies for use in aviation, defense systems, and space exploration. The course explores the evolution of flight, flight fundamentals, navigation and control, aerospace materials, propulsion, space travel, orbital mechanics, ergonomics, remotely operated systems, and related careers.

Aquatic Science

Credit: 1.0

Prerequisite: Biology, Chemistry

Aquatic Science focuses on the interactions of biotic and abiotic components in both marine and freshwater environments. Students study a variety of aquatic systems, conduct investigations and observations, and work collaboratively with their peers to tackle contemporary complex problems facing aquatic scientists.

Marine Biology (HW)

Credit: 1.0

Prerequisite: Aquatic Science

Marine Biology follows Aquatic science in the study of hydrodynamic systems on Earth. Advanced technical aspects such as buoyancy, fluid dynamics, pressure, depth, and volcanism are discussed. The unique anatomies of oceanic and freshwater creatures are surveyed.

Earth and Space Science

Credit: 1.0

Prerequisite: Three (3) years of Science

This course combines earth, ocean, atmospheric and space science in a single course. Students learn the basics and specific topics of geology, oceanography, meteorology, and planetary astronomy in a course that builds upon the knowledge learned in earlier high school science courses.

Astronomy (HW)

Credit: 1.0

Prerequisite: Earth and Space Science

Astronomy explores humanity's place in the Universe, the Universe's origin, and the formation of the Earth and solar system. Students study the properties of light and matter as they learn about tools used by astronomers to measure radiation from celestial sources, study black holes, investigate the expansion of the Universe, and search for extraterrestrial life.

Introduction to Mechanical Engineering – Statics (HW)

Credit: 1.0

Prerequisite: Precalculus, Physics

This advanced science class endeavors to give future mechanical engineers a glimpse into the kind of analysis done on complex mechanical systems in college. The level of the course is 1st or 2nd year engineering school. Statics encompasses the analysis of objects that are not in motion but still experience stress: bridges, buildings, cantilevers, etc. Analysis of these systems is the cornerstone of every other mechanical engineering discipline and is a good gauge of the future interest and success of burgeoning engineers. Topics include review of Newton's Laws, vectors, forces, moment (torque), equilibrium, types of supports, joints, trusses, center-of-mass (centroid), and moment of inertia. Calculus is necessary for some of these topics and is taught alongside those units as the need arises. If time allows, a construction project with fine-tuned calculations may be attempted.

Thermodynamics (HW)

Credit: 1.0

*Prerequisite: Precalculus and
Physics*

This Engineering course is among the first few courses a student of Mechanical Engineering encounters in college. Its focus is on the energy exchange within and between mechanical systems. Topics include: ideal gases, their interactions, and their extensive and intensive properties, the first, second, and zeroth laws of thermodynamics, internal energy (enthalpy), specific heat, adiabatic processes, other gas laws (Boyle's, Charles', and Gay-Lussac's), heating curves and triple points, equations of state, properties of open and closed systems, entropy, Gibbs free energy, Carnot cycles, types and specifics of heat transfer by conduction, convection, and radiation, and the Reynolds and Prandtl numbers and their applications.

Social Studies Department

World Geography (H)

Credit: 1.0

Prerequisite: None

Through thought-provoking lessons and immersive activities, students cultivate essential skills of geography, map reading, and global citizenship. Material travels from region to region, explores places and cultures, and stops at significant locations along the way to learn how humans live in and interact with their environment. Students complete this course with a greater understanding of the world they live in and a vision of what is possible in it.

World History (H)

Credit: 1.0

Prerequisite: World Geography

This course provides an in-depth analysis of the history of human civilization from ancient history to the contemporary world. Students explore the origins of civilization and culture, examining the people, both good and bad, and factors that changed our world over time. Students are given a chance to show what they have learned in a variety of ways and demonstrate their growth as global citizens. In most cases, students are enrolled in this class at the same time as English II.

United States History (H)

Credit: 1.0

Prerequisite: World History

This course is designed as a detailed, fast-paced study of American history from its pre-colonial period (in 1492) to the post-Cold War era. Students examine the social, political, economic, cultural, and intellectual history of the United States and how themes of technological change, religion, immigration, urbanization, and the expansion of the government have guided our country to where it is today. Students acquire a knowledge and understanding of the general narrative of American history, develop the ability to see the facts of American history in context, recognize causes and results, and determine significance. Students gain an appreciation for the rich cultural contributions made by those who created American heritage and learn of the consequences of American contact with other areas of the world. Students achieve the ability to read historical materials in a discriminating way, weigh evidence to reach conclusions based on fact (rather than bias), and express understanding in discussions and through writing.

US Government (H)

Credit: 0.5

Prerequisite: U.S. History, World Geography, World History

This one semester course examines the origins, development, structure, and functions of American national government. Students study topics including constitutional framework, federalism, the branches of government, civil rights and liberties, political participation, and policy formation. Upon completion, students demonstrate an understanding of the basic concepts

and participatory processes of the American political system. Basic concepts of Texas government and its relationships with federal government are also examined.

Economics (H)

Credit: 0.5

Prerequisite: US History, World History, World Geography

This one semester course is an introduction to the essential concepts, principles, values, and methods of economic analysis and their application to the contemporary world. Students gain a greater understanding of economics ranging from the viewpoint of the individual consumer or small business owner to the global economy. Various types of economic systems, decisions, indicators, and cycles are explained as well as personal economic decision-making concepts like credit and interest rates. Financial and governmental institutions' workings are detailed as well as how history and politics relate to the study of economics.

American Studies (HW)

Credit: 1.0

Prerequisite: None

This course seeks to answer the question made famous by Alexis de Tocqueville in *Democracy in America*: what makes this country so unique? As we search for answers, this class will explore how seminal works of American literature anticipate and respond to the key political and historical events that have shaped the United States.

Constitutional Law and Social Issues (HW)

Credit: 0.5

Prerequisite: World History, U.S. History

The objective of the course is to examine the structure and principles of the US Constitution in relation to other forms of government and nations as well as the impact of that structure on the issues of the current day and international relations. The course focuses on how constitutional provisions and interpretations impact and influence current events. Students are encouraged and expected to develop and express informed individual positions and opinions on subject matter.

Civics (H)

Credit: 1.0

Prerequisite: None

While the course aims to help students learn about our federal government, it mostly focuses on state and local government. The course provides students with an understanding of democratic processes work how to participate in these processes. The course includes opportunities for students to engage in classroom activities that model democratic processes, and opportunities to participate in the civic life of their communities. Students learn the civic knowledge, skills, and disposition that equips them to be active participants in American democracy.

Current Issues (H)

Credit: 1.0

Prerequisite: See description

Current Issues is a course that prepares students for the world around them. No experience in current issues or the news is needed to take this class, but a desire to learn and grow is. Students explore both short- and long-term topics with a focus on exploring the cause-and-effect relationships to these moments. In this setting, students can ask frank questions and learn more about the global society in which we live. Students are introduced to the federal system and government as well as the court system to better understand events they hear about in a variety of media. Students can also influence the class by submitting current events and leading discussions in the classroom about current issues that interest them and their peers. In addition, they learn how to build and develop a logical argument, shying away from fallacies and circular logic. A student must have completed either Lower School US History or Lower School 20th Century History at the minimum. This class reaches across curriculum to provide a broad and curated look at contemporary events. Current issues include research (both directed and self-guided), open dialogue and discussion, formal argumentative papers, and reading about topics in an open but regulated setting.

European Studies (HW)

Credit: 1.0

Prerequisite: None

This class helps students understand how the development of European historical and intellectual thought from 1500 AD influences us as inheritors of this complex cultural tradition. We will look at how various leaders and institutions in Europe sought to legitimize power and authority in response to the emergence of humanism after the Renaissance. To do this, we will explore how seminal European works of literature and philosophy anticipate and respond to key military, political, historical, and religious events.

Foundations of Western Civilization (HW)

Credit: 1.0

Prerequisite: None

This class will explore the development of Western historical and intellectual thought up to 1500 AD. Students will read seminal works of literature and philosophy and take note of how these anticipate and respond to key military, political, and historical events.

Literature and Warfare (HW)

Credit: 1.0

Prerequisite: English 3

This class examines literary representations of warfare along with some of the most influential military personalities and events in classical and modern history. Students learn military strategy and history and engage in thoughtful discussions about how and why great works of literature respond in the ways they do to momentous battles and conflicts.

Negotiations (HW)

Credit: 0.5

Prerequisite: None

This course introduces negotiation fundamentals and definitions, a conceptual framework for negotiations, and examples of negotiation through written work and exercises. Negotiation is an indispensable skill – everything here is meant to help prepare you for skillful and effective negotiations.