High School Core Subjects
Course Descriptions
2025-26

Introduction:

These courses represent the totality of Core Subject 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. 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*

This course is a broad overview of American literature from its humble colonial roots to celebrated 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*

The study of British literature is also the study of the evolution of the English language as we know it. This course provides a chronological examination of British literature, beginning with some of the earliest written works in English. Students hone their literary analysis and the tools required for effective composition and 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.

Geometry (H)
Credit: 1.0 *Prerequisite: Algebra I*

Geometry introduces the concept of formal reasoning in the context of familiar shapes such as points, lines, and solids. It furthers the study of angles, polygons, proof, similarity, and scale. It also introduces trigonometry.

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, the study of limits, covers concepts that rely on theoretical quantities that are infinitely large or small. Limits, derivatives and their applications, integrals and their applications, and advanced techniques of integration are covered.

Geometry II (HW)
Credit: 1.0 *Prerequisite: Geometry, Algebra II, or Instructor's Permission*

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 III topic).

Algebraic Reasoning
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 basic and advanced statistics to solve workplace problems using Microsoft Excel. Students learn to make sense 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 and integrate multiple data sources into meaningful information.

Science Department

Integrated Physics and Chemistry (9th grade and up)
Credit: 1.0 *Prerequisite: None*

Integrated Physics and Chemistry introduces students to 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 (open to advanced 7th and 8th graders)
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 phenomena such as kinematics, forces, energy, momentum, waves, electricity, atomic structure, the periodic table, electronic configuration, ionic compounds, chemical reactivity, and the properties of and changes in states of matter.

Biology (H)
Credit: 1.0 *Prerequisite: None*

Students learn about living things, how they differ from non-living things, and how they interact with the world around them. Students examine taxonomy, cells, photosynthesis, cellular respiration, genetics, and the structure of organisms. They learn these components through classroom discussions, research, hands-on activities, labs, and field trips.

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*

Students in this class study the structures and functions 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.

Chemistry (H)
Credit: 1.0 *Prerequisite: Biology, Algebra I*

Study 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*

Students look deeper into 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 develop a solid foundation of knowledge in physics, understanding 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 pertain to real life.

Physics (H)
Credit: 1.0 *Prerequisite: Algebra I*

In this course students learn about the physical world by covering topics in kinematics, force and motion, energy, momentum, heat, thermodynamics, light, sound, electricity, magnetism, electromagnetism, and contemporary physics concepts.

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.

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 of dams, energy solutions, erosion, temperature regulation, and meteorology are discussed.

Forensic Science (H)
Credit: 1.0 *Prerequisite: Biology, Chemistry*

Students use a structured and scientific approach to research crimes and the psychology of criminal behavior. Students learn terminology and investigative procedures related such as questioning, interviewing, criminal behavior characteristics, and truth detection, and review the 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.

Aerospace Engineering (HW)
Credit: 1.0 *Prerequisite: Geometry, Algebra II*

Students examine innovative technologies for use in aviation, defense systems, and space exploration. This class covers 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 into a single course. Students learn the basics 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, its 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, the expansion of the Universe, and the search for extraterrestrial life.

Forensic Science II (HW)
Credit: 1.0 *Prerequisite: Forensics Science I*

This course includes an in-depth exploration 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.

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. Statics encompasses the analysis of objects that are not in motion but still experience stress: bridges, buildings, cantilevers, etc. 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 & 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 in-depth discussion and hands-on activities, students cultivate essential skills in geography, map reading, and global citizenship as they learn how humans live in and interact with their environment. Students will leave 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*

In this course students explore the origins of civilization and culture, examining the people, both good and bad, and factors that changed our world over time. Students will show what they have learned in a variety of ways and demonstrate their growth as global citizens.

United States History (H)
Credit: 1.0 *Prerequisite: World History*

This course is a fast-paced study of American history from its pre-colonial period to the present day. Students gain an appreciation for the rich cultural contributions of American heritage and learn of the consequences of American contact with other areas of the world. Students read historical materials, weigh evidence to reach conclusions, 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. Study topics including constitutional framework, federalism, the branches of government, civil rights and liberties, political participation, and policy formation. Students acquire understanding of the basic concepts and participatory processes of the American political system, as well as Texas government and its relationships with federal politics.

Economics (H)
Credit: 0.5 *Prerequisite: US History, World History, World Geography*

This semester course is an introduction to the essential concepts, principles, values, and methods of economic analysis and their application to the contemporary world. Students learn about the viewpoint of the individual consumer, small business owners, and the global economy. This class also covers various types of economic systems, decisions, indicators, and cycles, 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.