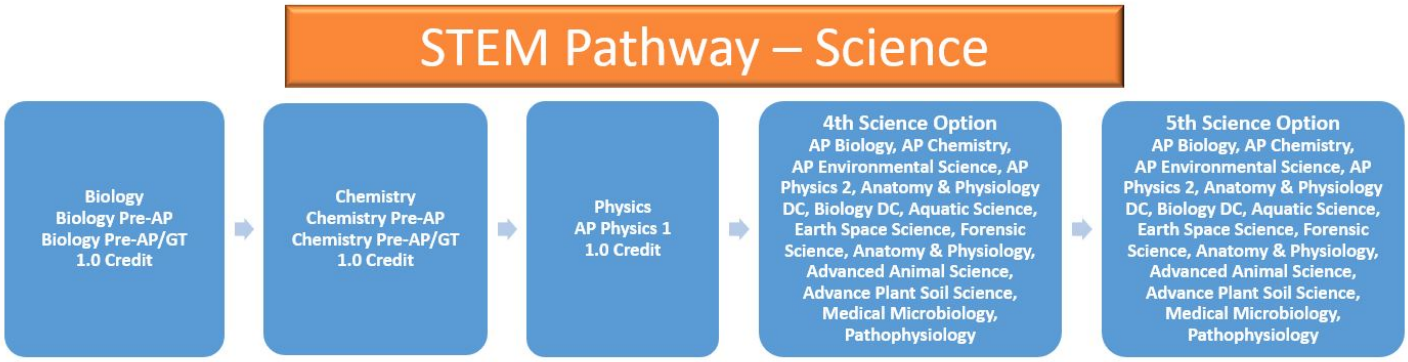


# SCIENCE

## INTEGRATED PHYSICS AND CHEMISTRY

**KISD #:** **0411**
**Grades:** **10** **1 Credit**
**Prerequisite:** **None**

This course is designed to acquaint the student with the concepts and processes of physics and chemistry. Laboratory investigations are an integral part of the course. These laboratory investigations will allow the student to utilize the scientific method and develop critical thinking skills while problem solving. Topics of study shall include properties and relationships of matter and energy, atomic structure, chemical formulas and equations, mechanics, heat, electricity and magnetism, motion, waves, light and sound. This course is not appropriate for students with credit for Chemistry or Physics. IPC will be offered for the Recommended High School Program in Klein ISD beginning with the ninth grade class in the Fall Semester of 2010. This course is not appropriate for students with credit for chemistry or physics.

## INTEGRATED PHYSICS AND CHEMISTRY LIMITED ENGLISH SHELTERED

**KISD #:** **0411N**
**Grades:** **10** **1 Credit**
**Prerequisite:** **Counselor Approval**

This course is designed to acquaint the ESL student with the concepts and processes of physics and chemistry. Laboratory investigations are an integral part of the course. These laboratory investigations will allow the student to utilize the scientific method and develop critical thinking skills while problem solving. Topics of study shall include properties and relationships of matter and energy, atomic structure, chemical formulas and equations, mechanics, heat, electricity and magnetism, and light and sound. The course will cover the essential knowledge and skills of the regular integrated physics and chemistry course with an emphasis on a variety of methods and modalities for instruction to meet the needs of the limited English speaker. This course is not appropriate for students with credit for chemistry or physics.

## BIOLOGY 1

**KISD #:** **0421**
**Grades:** **9-12** **1 Credit**
**Prerequisite:** **None**

This course is designed to acquaint the student with the concepts and processes of biology. A developmental approach is utilized beginning with life at the cell level and progressing to the most advanced life forms. Laboratory investigations are an integral part of the course. Topics of study shall include cytology, viruses, tissues and organs of the human systems, genetics, and biological evolution, and taxonomy, energy transfers in living organisms, homeostasis, ecosystems and plants. During the course of instruction in this class, the textbooks, audiovisual materials, and lectures will include instruction and information concerning human growth and development. These topics are designed to inform and instruct only and not to enforce or diminish the individual's personal or religious attitudes. **This course requires an EOC exam.**

## BIOLOGY 1 ESL

**KISD #: 0421N**
**Grades: 9-12** **1 Credit**
**Prerequisite:** **Counselor Approval**

This course is designed to acquaint the ESL student with the concepts and processes of biology. A developmental approach is utilized beginning with life at the cell level and progressing to the most advanced life forms. Laboratory investigations are an integral part of the course. Topics of study shall include cytology, viruses, tissues and organs of the human systems, genetics, biological evolution, taxonomy, energy transfers in living organisms, homeostasis, ecosystems and plants. During the course of instruction in this class, the textbooks, audiovisual materials, and lectures will include instruction and information concerning human growth and development. These topics are designed to inform and instruct only and not to enforce or diminish the individual's personal or religious attitudes. The course will cover the essential knowledge and skills of the regular biology course with an emphasis on a variety of methods and modalities for instruction to meet the needs of the limited English speaker. **This course requires an EOC exam.**

## BIOLOGY 1 PRE-AP

**KISD #: 0423Q**
**Grades: 9-12** **1 Credit**
**Prerequisite:** **None**

This course is designed for the student with a high interest in science and/or who intends to take further science courses. It is designed to acquaint the student with concepts and processes of biology and is and expansion of the regular class. Experimentation and individual student inquiry are essential components of the course. The level of instruction/curriculum will focus on preparing the student for advanced placement courses. These topics are designed to inform and instruct only and not to enforce or diminish the individual's personal or religious attitudes. **This course requires an EOC exam.**
**Advanced Grade Points:** Yes

## BIOLOGY 1 PRE-AP/GT

**KISD #: 0427**
**Grades: 9-12** **1 Credit**
**Prerequisite:** **Meets district guidelines**

This course is designed for the student with a high aptitude in science, and it acquaints the student with the concepts and processes of biology. This course focuses on strategies to support abstract reasoning problem solving, research skills and a students' active involvement in the learning process. These topics are designed to inform and instruct only and not to enforce or diminish the individual's personal or religious attitudes. GT services are provided through the PreAP classes. **This course requires an EOC exam.**
**Advanced Grade Points:** Yes

## BIOLOGY 1 ADVANCED PLACEMENT

**KISD #: 0425**
**Grades: 11-12** **1 Credit**
**Prerequisite:** **Biology 1 and Chemistry 1**

This course examines and discusses the principles of biology in considerable detail. Emphasis is placed on laboratory experiments and individual research. This course follows the Advanced Placement recommended scope and sequence. Topics include: chemistry of life, cells, cellular energetics, heredity and evolutions, organisms and populations. During the course of instruction in this class, the textbooks, audiovisual materials, and lectures will include instruction and information concerning human growth and development. These topics are designed to inform and instruct only and not to enforce or diminish the individual's personal or religious attitudes.
**Advanced Grade Points:** Yes

## BIOLOGY DUAL CREDIT

**KISD #:**
**Grades: 11-12** **1 Credit**
**Prerequisite:** **Meets district guidelines**

A contemporary course including applications of the scientific method, cellular and molecular biology, biochemistry, classical and human genetics, virology and mechanisms of evolution. The course includes a detailed survey of the major phylogenetic lineages as well as the ecological roles and relationships as well as behavior of organisms which will be integrated throughout the course.

## IB BIOLOGY SL

**KISD #: 3430**
**Grades: 11-12** **1 Credit**
**Prerequisite:** **Pre-IB or Pre-AP Biology and Pre-IB or Pre-AP Chemistry**

The primary goal of this course is to help students gain an appreciation of science as a process and provide them with the conceptual framework, factual knowledge, and analytical skills
necessary to deal critically with the rapidly changing science of biology. The course will consist of lecture, teacher-designed labs, student-designed labs and other types of experimental learning. The material of study for Biology (SL) will include the following topics: biochemistry, cells, genetics, nucleic acids, proteins, evolution, ecology and evolution, ecology and conservation, and human health physiology. This course includes a multi-disciplinary group science project.
**Advanced Grade Points:** Yes

## IB BIOLOGY HL

**KISD #: 3436**
**Grades: 12** **1 Credit**
**Prerequisite:** **IB Biology SL**

The goal of this course is to help students gain an appreciation of science as a process and provide them with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology. This second year of biology includes extensions of the Biology SL topics with the addition of the following: defense against infectious diseases, human reproduction, nerves, muscles, movement, excretion, and plant science. The course consists of lecture, teacher-designed labs and other types of experimental learning. This course includes a multi-disciplinary group science project.
**Advanced Grade Points:** Yes

## CHEMISTRY

**KISD #: 0431**
**Grades: 10-12** **1 Credit**
**Prerequisite:** **None**

This course is designed to acquaint the student with the concepts and processes of chemistry. This laboratory program focuses on chemistry concepts and how they apply to the physical world. The student builds an understanding of chemistry through exploration, demonstration, questioning, and application of the concepts through a variety of inquiry-based activities. All-important concepts are covered in several chapters in a spiraling process that allows students to see concepts in a variety of contexts and in ways that are meaningful to the student.

## CHEMISTRY PRE-AP

**KISD #: 0433Q**
**Grades: 10-12** **1 Credit**
**Prerequisite:** **Algebra 1 and Meets district guidelines**

This course is designed for the student with a high interest in science and/or who intends to take further science courses. It is designed to acquaint the student with the concepts and processes of chemistry and is a modification and expansion of the regular class. Experimentation, individual student inquiry and mathematical applications are an integral part of the course. The level of instruction/curriculum will focus on preparing the student for advanced placement courses.
**Advanced Grade Points:** Yes

## CHEMISTRY PRE-AP/GT

**KISD #: 0437**
**Grades: 10-12** **1 Credit**
**Prerequisite:** **Algebra 1 <u>and</u> Meets district guidelines**

This course is designed for the student with a high interest in science and/or who intends to take further science courses. It is designed to acquaint the student with the concepts and processes of chemistry and is a modification and expansion of the regular class. Experimentation, individual student inquiry and mathematical applications are an integral part of the course. The level of instruction/curriculum will focus on preparing the student for advanced placement courses. This
course focuses on strategies to support abstract reasoning problem solving, research skills and a students' active involvement in the learning process. GT services are provided through the Pre-AP classes.
**Advanced Grade Points:** Yes

## CHEMISTRY ADVANCED PLACEMENT

**KISD #: 0435**
**Grades: 11-12** **1 Credit**

**Prerequisite:** **Chemistry 1 and Physics 1 and Algebra 2 preferred. (With approval of principal, Physics 1 may be taken concurrently**

Chemistry AP is an in-depth study of the principles set forth in Chemistry 1. This course follows the Advanced Placement recommended scope and sequence. Topics include: structure and properties of atoms and molecules stated of matter and descriptive chemistry. Lab exercises emphasize the mole concept, gravimetric and volumetric quantitative analysis, qualitative analysis and organic chemistry. Experimentation, individual student inquiry and mathematical problem solving are an integral part of the course.

**Advanced Grade Points:** Yes

## IB CHEMISTRY SL

**KISD #: 3432**

**Grades: 11 or 12** **1 Credit**

**Prerequisite:** **Pre-IP or Pre-AP Biology and Pre-IP or Pre-AP Chemistry**

This course, designed for students with a depth of understanding of fundamentals and a reasonable competence in dealing with chemical problems, provides opportunities for scientific study and creativity within global context which will stimulate and challenge students. The course will contribute to the students' ability to analyze, evaluate, and synthesize scientific information and help develop the students' ability to think clearly and express their ideas or ally and in writing with clarity and logic. The course includes the following topics of study: stoichiometry, atomic theory and atomic models, periodicity, bonding, states of matter, solutions, energetics, kinetics, equilibrium, acids and bases, oxidation and reduction, organic chemistry, environmental chemistry, and fuels and energy. This course encourages an understanding of the relationships between scientific disciplines and the overarching nature of the scientific method. In an effort to develop students' experimental and investigative skills, 40% of a student's classroom time will be devoted to performing laboratory activities. A multi-disciplinary group project is a component of this class.

**Advanced Grade Points:** Yes

## IB CHEMISTRY HL

**KISD #: 3433**

**Grades: 12** **1 Credit**

**Prerequisite:** **IB Chemistry SL**

This course, designed for students with a depth of understanding of fundamentals and a reasonable competence in dealing with chemical problems, provides opportunities for scientific study and creativity within global context which will stimulate and challenge students. The course will contribute to the students' ability to analyze, evaluate, and synthesize scientific information and help develop the students' ability to think clearly and express their ideas orally and in writing with clarity and logic. The course reviews the topics of study covered in SL as a corestoichiometry, atomic theory and atomic models, periodicity, bonding, states of matter, solutions, energetic, kinetics, equilibrium, acids and bases, oxidation and reduction, organic chemistry--but also continues with the topics in greater depth. HL students are expected to study additional topics and to study extension material of a more demanding nature than SL. This course encourages an understanding of the relationships between scientific disciplines and the overarching nature of the scientific method. In an effort to develop students' experimental and investigative skills, 40% of a student's classroom time will be devoted to performing laboratory activities and independent investigations. A multi-disciplinary group project is also a component of this class.

**Advanced Grade Points:** Yes

## PHYSICS

**KISD #: 0441**

**Grades: 10-12** **1 Credit**

**Prerequisite:** **Geometry preferred**

Physics is the study of the interactions of matter and energy. This laboratory program focuses on physics concepts and how they apply to the physical world. The student builds understanding through exploration, demonstration, questioning, and application of the concepts through a variety of inquiry-based activities. Topics include: mechanics, properties of matter, heat, sound and light, electricity and magnetism, and atomic and nuclear Physics. Mathematical applications are included throughout the course.

## PHYSICS PIP

**KISD #: 3474**

**Grades: 10-11** **1 Credit**

**Prerequisite:** **PIP Biology and PIP Chemistry**

PIB Physics is a comprehensive study in classical mechanics and electromagnetism. Topics include Newton's Laws, Kinematics, Vectors, Circular motion, Gravitation, Work-Energy, Momentum, Electrostatics, Magnetism, Ohm's Law, DC circuitry, Light, Sound and Nuclear physics. PIB physics

provides a foundation for those students wanting to take IB Physics SL. Students should have strong algebra skills in order to be successful in this rigorous course.
**Advanced Grade Points:** Yes

## ADVANCED PLACEMENT PHYSICS 1

**KISD #: 0445**
**Grades: 10-12** **1 Credit**
**Prerequisite:** **Algebra 1 and 2 (Prior to or concurrent enrollment)**

This course is designed for the student with a high interest in science and/or who intends to take further science courses. AP Physics 1 is algebra-based and is the equivalent of a first-semester college course in Algebra-based physics. It is designed to be taught over a full academic year to enable AP students
to develop deep understanding of the content and to focus on applying their knowledge through inquiry labs. The full year allows time for inclusion of physics content specified by state standards. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; mechanical waves and sound. It also introduces electric circuits.
**Advanced Grade Points:** Yes

## ADVANCED PLACEMENT PHYSICS 2

**KISD #: 0448**
**Grades: 10-12** **1 Credit**
**Prerequisite:** **AP Physics 1, Algebra 2 and Pre-Calculus (or concurrent enrollment)**

This course is designed for the student with a high interest in science and/or who intends to take further science courses. AP Physics 2 is algebra-based and is the equivalent of a second-semester college course in Algebra-based physics. It is designed to be taught over a full academic year to enable AP students to develop deep understanding of the content and to focus on applying their knowledge through inquiry labs. The full year allows time for inclusion of physics content specified by state standards. The course covers fluid mechanics; thermodynamics; electricity and magnetism; optics; atomic and nuclear physics.
**Advanced Grade Points:** Yes

## IB PHYSICS SL

**KISD #: 3434**
**Grades: 11 or 12** **1 Credit**
**Prerequisite:** **PreIP or Pre-AP Biology or Pre-AP Chemistry**

Physics is the study of the relationship between matter and energy. The student will be introduced to fundamental concepts in the areas of mechanics, wave actions, heat, electricity, magnetism, and nuclear phenomena. Observations of the laws of force and motion, the nature of light, wave phenomena, and properties of electricity and magnetism are integral components of the course. Students will develop experimental and investigative scientific skills, including an
ability to ask physical questions and to obtain solutions to those questions by use of physical intuition, experimental investigation, and formal logic. Awareness will be gained of the
connections of physics to other disciplines and to societal issues. Knowledge of algebra and basic trigonometry is required for the course. Basic ideas of calculus may be introduced in the study of some concepts. In an effort to develop students' experimental and investigative skills, at least 40% of a student's classroom time will be devoted to performing laboratory and inquiry activities that cover a range of topics and skills including a multi-disciplinary group science project. Laboratory investigations will help the student develop an ability to analyze, evaluate, and synthesize scientific information. **It is strongly recommended that students take a second year
of physics before attempting the IB Physics SL exam.**
**Advanced Grade Points:** Yes

## IB PHYSICS HL

**KISD #: 3438**
**Grades: 12** **1 Credit**
**Prerequisite:** **IB Physics SL**

In this second year of the study of physics, the student will encounter further extensions of the fundamental concepts in the areas of mechanics, wave actions, heat, electricity, magnetism, and nuclear phenomena. Observations of the laws of force and motion, the nature of light, wave phenomena, and properties of electricity and magnetism are integral components of the course. In addition, the student will study topics on relativity, optics, and astrophysics. Students will
develop experimental and investigative scientific s kills, including an ability to ask physical questions and to obtain solutions to those questions by use of physical intuition, experimental investigation, and formal logic. Awareness will be gained of the connections of physics to other disciplines and to societal issues. Knowledge of algebra and basic trigonometry is required for the course. Basic ideas of calculus may be introduced in the study of some concepts. In an effort to

develop students' experimental and investigative skills, at least 40% of a student's classroom time will be devoted to performing laboratory and inquiry activities that cover a range of topics and skills including a multi-disciplinary group science project. Laboratory investigations will help the student develop an ability to analyze, evaluate, and synthesize scientific information.

**Advanced Grade Points:** Yes

## EARTH SPACE SCIENCE

**KISD #: 0454**
**Grades: 11-12** **1 Credit**
**Prerequisite:** **Biology 1**

Earth and Space Science, students conduct field and laboratory investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific
problem solving. Students study a variety of topics that are designed to develop an understanding of the Earth's system in space and time. Concepts included are the complex and dynamic history of the earth and the advances in technologies that help further that understanding, the geosphere and complex subsystems linking it to the Earth's surface, and the fluid earth's influences on climate and its implications to life on earth.

## AQUATIC SCIENCE

**KISD #: 0451**
**Grades: 11-12** **1 Credit**
**Prerequisite:** **Biology 1**

In Aquatic Science, students conduct field and laboratory investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Students study a variety of topics that include the following: components of an aquatic ecosystem; relationships among aquatic habitats and ecosystems; roles of cycles within an aquatic environment; adaptations of aquatic organisms; changes within aquatic environments; geological phenomena and fluid dynamics effects; and origin and use of water in a watershed.

## ENVIRONMENTAL SYSTEMS

**KISD #: 0457**
**Grades: 11-12** **1 Credit**
**Prerequisite:** **Biology 1 or 1 unit of high school Physical Science**

In Environmental Systems, students conduct field and laboratory investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Students study a variety of topics that include the following: biotic and abiotic factors in habitats, ecosystems and biomes, interrelationships among resources and an environmental system, sources and flow of energy through an
environmental system, relationship between carrying capacity and changes in populations and ecosystems, and changes in environments.

## ENVIRONMENTAL SCIENCE ADVANCED PLACEMENT

**KISD #: 0465**
**Grades: 11-12** **1 Credit**
**Prerequisite:** **Biology 1 or Chemistry 1 preferred and meets district guidelines**

This course is designed to be the equivalent of an introductory college course in environmental science. The goal of the course is to provide students with the scientific principles, concepts, and methodologies required to understand the inter-relationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or
preventing them. It is an interdisciplinary course with a strong laboratory component.

## ANATOMY AND PHYSIOLOGY

**KISD #: 927118** **TX #: 13022400**
**Grades: 11-12** **1.0 Credit/Science Credit Option**
**Prerequisite:** **Biology I and Chemistry I**

Students will conduct laboratory investigations/fieldwork, use scientific methods during investigations, and make informed decisions using critical thinking and problem solving. Topics will be presented through an integration of biology, chemistry, and physics. Students will study the structures and functions of the human body and body systems and will investigate the body's responses to forces, maintenance of homeostasis, electrical interactions, transport systems, and energy systems. Students will also analyze the relationship between anatomical structures and physiological functions of the human systems. This course is also listed in the Science Section of the Guidance Handbook.

**Advanced Grade Points:** Yes

## ANATOMY AND PHYSIOLOGY DUAL CREDIT

**KISD #: 9271DC18** **TX #: 13022400**
**Grades: 11-12** **1.0 Credit/Science Credit Option**
**Prerequisite:** **Biology I and Chemistry I**

Students will conduct laboratory investigations/fieldwork, use scientific methods during investigations, and make informed decisions using critical thinking and problem solving to study the structure and function of the human body. Emphasis will be given to the study of cells and tissues and anatomical and physiological interrelationships of the integumentary, skeletal, muscular, and nervous systems. Designed primarily for students entering health careers. This course is also listed in the Science section of the Catalog.

**Advanced Grade Points:** Yes
**Dual Credit Correlation:** BIOL 2401

## ADVANCED PLANT AND SOIL SCIENCE

**KISD #: 907118** **TX #: 13002500**
**Grades: 12** **1.0 Credit/4th Science Credit Option**
**Prerequisite:** **Refer to Pathway Flow Chart**
**Prior Prerequisite:** **One credit from AFNR cluster**

Students will study the exploration of principles related to plant production and the management of soils as related to agriculture. Included in the course are experiments, laboratory explorations, and the study of soil and plant relationships that affect the production of food and fiber. This course is also listed in the Science section of the Catalog.

**Advanced Grade Points:** Yes

## ADVANCED ANIMAL SCIENCE

**KISD #: 907018** **TX #: 13000200**
**Grades: 12** **1.0 Credit/4th Science Credit Option**
**Prerequisite:** **2 of the following: Small Animal, Livestock Production and Vet Med Applications**
**Prior Prerequisite:** **Small Animal and Livestock Production**

Students will gain an advanced understanding of animal science. Included in the course are experiments, laboratory explorations, and the study of reproduction, breeding, genetics, anatomy, physiology, nutrition, health, and the marketing and harvesting of domestic livestock. This course is also listed in the Science section of the Catalog.

**Required Fee/Materials:** Yes
**Advanced Grade Points:** Yes

## FORENSIC SCIENCE

**KISD #: 963518** **TX #: 13033900**
**Grades: 12** **1.0 Credit/4th Science Credit Option**
**Prerequisite:** **Law Enforcement I and Biology I and Chemistry I**

Students will apply science to connect a violation of law to a specific criminal, criminal act, or behavior and victim. Students will learn terminology and procedures related to the search and examination of physical evidence in criminal cases as they are performed in a typical crime laboratory. Using scientific methods, students will collect and analyze evidence such as fingerprints, bodily fluids, hairs, fibers, paint, glass, and cartridge cases. Students will also learn the history and the legal aspects as they relate to each discipline of forensic science. This same course is also listed in the Science Section of the Guidance Handbook.

**Advanced Grade Points:** Yes