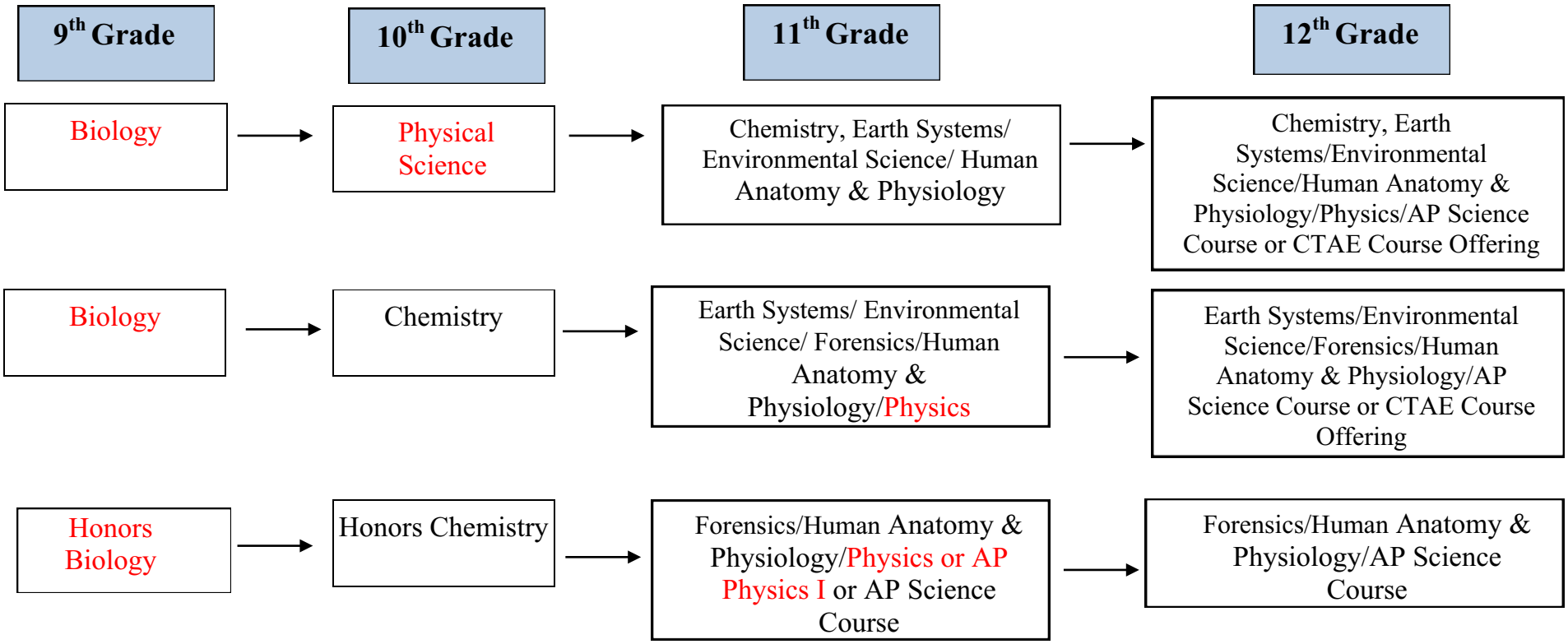
Science Course Sequence



All students are required to successfully complete four science units:

- Biology (required);
- Physical Science or Physics (required);
- Chemistry/Earth Systems/Environmental Science/Forensics/Advanced Placement course *(with respect to prerequisites)* or CTAE Fourth Science Option

The fourth science unit does not necessarily need to be completed during student's fourth or senior year.

Students who earned High School Physical Science credit (Course 5533) while in middle school should follow Sequence 2 or Sequence 3.

SCIENCE

Course Title	Biology I
Course Number	5633
Course Description	The Biology curriculum is designed to continue student investigations of the life sciences that began in grades K-8 and provide students the necessary skills to be proficient in biology. This curriculum includes more abstract concepts such as the interdependence of organisms, the relationship of matter, energy, and organization in living systems, the behavior of organisms, and biological evolution. Students will investigate biological concepts through experience in laboratories and field work using the processes of inquiry. ***The state mandated Georgia Milestones End of Course Assessment is required and counts 20% of the student's overall course grade.***
Prerequisite	None

Course Title	Biology I Honors
Course Number	5665
Course Description	The Biology curriculum is designed to continue student investigations of the life sciences that began in grades K-8 and provide students the necessary skills to be proficient in biology. This curriculum includes more abstract concepts such as the interdependence of organisms, the relationship of matter, energy, and organization in living systems, the behavior of organisms, and biological evolution. Students will investigate biological concepts through experience in laboratories and field work using the processes of inquiry. Honors Biology is a more detailed study of life than Biology. Students in this laboratory-based course will explore the same topics covered in Biology, but with more detail in all areas of biological study. Other topics and instructional methods specific to preparing students for the rigors of future honors science courses, Advanced Placement, and IB science courses are also included. Science fair projects or other designated national or state recognized science activities are required. ***The state mandated Georgia Milestones End of Course Assessment is required and counts 20% of the student's overall course grade.***
Prerequisite	Teacher Recommendation, Passed Coordinate Algebra and Enrolled in Analytic Geometry/GSE Geometry

Course Title	Chemistry I
Course Number	5673
Course Description	The Chemistry curriculum is designed to continue student investigations of the physical sciences that began in grades K-8 and provide students the necessary skills to be proficient in chemistry. This curriculum includes more abstract concepts such as the structure of atoms, structure and properties of matter, characterization of the properties that describe solutions and the nature of acids and bases, and the conservation and interaction of energy and matter. Students investigate chemistry concepts through experience in laboratories and field work using the processes of inquiry.
Prerequisite	Passed Biology and Coordinate Algebra/GSE Algebra I

Course Title	Chemistry I Honors
Course Number	5723
Course Description	The Chemistry curriculum is designed to continue student investigations of the physical sciences that began in grades K-8 and provide students the necessary skills to be proficient in chemistry. This curriculum includes more abstract concepts such as the structure of atoms, structure and properties of matter, characterization of the properties that describe solutions and the nature of acids and bases, and the conservation and interaction of energy and matter. Students investigate chemistry concepts through experience in laboratories and field work using the processes of inquiry. Honors Chemistry is designed to cover many of the same topics as the Chemistry course, but in more detail. Substantial lab time is also required in order to accomplish the objectives set for this course. Other topics specific to preparing students for the rigors of an Advanced Placement course will be integrated throughout the course. Science Fair projects or other designated national or state recognized science activities are required.
Prerequisite	Teacher Recommendation, Passed Honors Biology and Coordinate Algebra/GSE Algebra I

SCIENCE

Course Title	Earth Systems
Course Number	5903
Course Description	Earth Systems Science is designed to continue student investigations that began in K-8 Earth Science and Life Science curricula and investigate the connections among Earth's systems through Earth history. These systems – the atmosphere, hydrosphere, geosphere, and biosphere – interact through time to produce the Earth's landscapes, ecology, and resources. This course develops the explanations of phenomena fundamental to the sciences of geology and physical geography, including the early history of the Earth, plate tectonics, landform evolution, the Earth's geologic record, weather and climate, and the history of life on Earth. Instruction should focus on inquiry and development of scientific explanations, rather than mere descriptions of phenomena. Case studies, laboratory exercises, maps, and data analysis should be integrated into units. Special attention should be paid to topics of current interest (e.g., recent earthquakes, tsunamis, global warming, price of resources) and to potential careers in the geosciences.
Prerequisite	None

Course Title	Environmental Science
Course Number	5852
Course Description	The Environmental Science curriculum is designed to extend student investigations that began in grades K-8. It integrates the study of many components of our environment, including the human impact on our planet. The concepts integrated into this course include: flow of energy & cycling of matter, interconnection of all life, stability and change in an ecosystem, conservation and resource allocation, and evaluation of human activity and technology. The scientific principles and related technology will assist the student in understanding the relationships between local, national, and global environmental issues.
Prerequisite	None

Course Title	Forensic Science (not offered at each high school)
Course Number	5920
Course Description	In this course students will learn the scientific protocols for analyzing a crime scene, how to use chemical and physical separation methods to isolate and identify materials, how to analyze biological evidence and the criminal use of tools, including impressions from firearms, tool marks, arson, and explosive evidence. Students investigate Forensic Science concepts through experience in laboratories and field work using the processes of inquiry.
Prerequisite	Passed Biology, Chemistry and Coordinate Algebra/GSE Algebra I

Course Title	Human Anatomy/Physiology
Course Number	5833
Course Description	The human anatomy and physiology curriculum is designed to continue student investigations that began in grades K-8 and high school biology. Areas of study include organization of the body; protection, support and movement; providing internal coordination and regulation; processing and transporting; and reproduction, growth and development. The course integrates careers related to medicine, research, health-care and modern medical and utilizes case studies concerning diseases, disorders and ailments. Human Anatomy and Physiology is performance and laboratory based, with Chemistry integrated throughout. Required in the course are various detailed mammalian dissections. Important components of the course are various projects, review of medical issues, and application of knowledge to technology and society.
Prerequisite	Passed Biology, and Physical Science or Chemistry

Course Title	Physical Science
Course Number	5533
Course Description	The Physical Science curriculum is designed to continue student investigations of the physical sciences that began in grades K-8 and provide students the necessary skills to have a richer knowledge base in physical science. This course is designed as a survey course of chemistry and physics. This curriculum includes the more abstract concepts such as the conceptualization of the structure of atoms, motion and forces, and the conservation of energy and matter, the action/reaction principle, and wave behavior. Students investigate physical science concepts through experience in laboratories and field work using the processes of inquiry. ***The state mandated Georgia Milestones End of Course Assessment is required and counts 20% of the student's overall course grade***
Prerequisite	None

SCIENCE

Course Title	Physics
Course Number	5754
Course Description	The Physics curriculum is designed to continue student investigations of the physical sciences that began in grades K-8 and provide students the necessary skills to be proficient in physics. This curriculum includes more abstract concepts such as interactions of matter and energy, velocity, acceleration, force, energy, momentum, and charge. Students investigate physics concepts through experience in laboratories and field work using the process of inquiry.
Prerequisite	Passed Coordinate Algebra/GSE Algebra I, and Analytic Geometry/GSE Geometry; enrolled in Advanced Algebra/ GSE Algebra II or above

Course Title	Scientific Research I
Course Number	5912
Course Description	Students taking the Scientific Research I course will develop projects that are mostly suggested or required by their teacher. It is expected that these students will receive strong support from their teacher and their research projects could be completed on a time frame of weeks. Presentation of the projects developed at this level will happen mostly in a classroom setting or school site science fair. ***Note: This course has not been approved as a fourth science by the Board of Regents.***
Prerequisite	None

Course Title	Scientific Research II
Course Number	5914
Course Description	Students taking the Scientific Research II course will develop projects based on their interests. These projects may be related to topics that they are covering in any of their science courses or could expand on those ideas. It is expected that the students will receive some support from their teachers, but they will be working mostly independently. Projects at this level could be completed on a time frame of weeks to months. Presentations of the projects developed at this level could take place at regional or state science fair competitions for example. ***Note: This course has not been approved as a fourth science by the Board of Regents.***
Prerequisite	Passed Scientific Research I

Course Title	Scientific Research III
Course Number	5916
Course Description	Students taking the Scientific Research III course will develop projects based on their interests. Projects at this level would be original in nature and will investigate students' ideas to solve a particular problem. It is expected that the students will work with someone outside the school setting as they work towards the solution of their problem. This type of project may take the whole length of the course to be completed. Students completing these projects are expected to present their solutions to the appropriate interests groups (i.e. a particular company, an interest group, etc.) or on settings like the Best Robotics competitions, Siemens, the High School Engineering Competition, etc.
Prerequisite	Passed Scientific Research I and Scientific Research II

Advanced Placement Science

Course Title	Advanced Placement Biology
Course Number	5654
Course Description	This course conforms to the College Board topics for the Advanced Placement Biology Examination. The major themes of the course as indicated by the AP Biology course guide include molecules and cells (emphasis on biological chemistry, cell structure and function and energy transformations with biological systems), genetics and evolution (molecular genetics, DNA, RNA, heredity, origin of life, natural selection, patterns of evolution), organisms and populations (principles of taxonomy, plants and animals, structure and function of various tissues and organs, population dynamics, ecosystems and community dynamics, and bio-geo-chemical cycles). This course requires a rigorous college level lab component and utilizes a college text. Students are expected to take the AP Biology exam in May, and college credit may be awarded for this course upon successfully passing the respective exam.
Prerequisite	Passed Biology I and Chemistry I

Course Title	Advanced Placement Chemistry
Course Number	5694
Course Description	This course conforms to the College Board topics for the Advanced Placement Chemistry Examination. The major themes for this course as indicated by the AP Chemistry course guide include the structure of matter, the states of matter, reactions, descriptive chemistry, and college level chemistry laboratories (substantial lab time is required in order to accomplish the objectives set for this course). This course requires a rigorous college level lab component and utilizes a college text. Students are expected to take the AP Chemistry exam in May, and college credit may be awarded for this course upon successfully passing the respective exam.
Prerequisite	Passed Chemistry I; enrolled in Advanced Algebra/GSE Algebra II

Course Title	Advanced Placement Environmental Science
Course Number	5854
Course Description	This course conforms to College Board topics for the Advanced Placement Environmental Science Examination. The major themes for this course as indicated by the AP Environmental Science course guide include Earth systems and resources, the living world, populations, land and water use, energy resources and consumption, pollution, and global change. This course requires a rigorous college level lab component and utilizes a college text. Students are expected to take the AP Environmental Science exam in May, and college credit may be awarded for this course upon successfully passing the respective exam.
Prerequisite	Passed Biology I and Chemistry I

Course Title	Advanced Placement Physics I
Course Number	5767
Course Description	This course conforms to College Board topics for the Advanced Placement Physics 1 Examination. AP Physics 1: Algebra-Based is the equivalent to a first-semester college course in algebra-based physics. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; and mechanical waves and sound. It will also introduce electric circuits. This course requires a rigorous college level lab component and utilizes a college text. Students are expected to take the Advanced Placement Physics I Exam in May, and college credit may be awarded for this course upon successfully passing the respective exam.
Prerequisite	Passed Coordinate Algebra/GSE Algebra I, Analytic Geometry/GSE Geometry; and enrolled in Advanced Algebra/GSE Algebra II or above

Course Title	Advanced Placement Physics II
Course Number	5771

Course Description	This course conforms to College Board topics for the Advanced Placement Physics 2 Examination. AP Physics 2: Algebra-Based is the equivalent to a second-semester college course in algebra-based physics. The course covers fluid statics and dynamics; thermodynamics with kinetic theory; PV diagrams and probability; electrostatics; electrical circuits with capacitors; magnetic fields; electromagnetism; physical and geometric optics; and quantum, atomic, and nuclear physics. This course requires a rigorous college level lab component and utilizes a college text. Students are expected to take the Advanced Placement Physics I Exam in May, and college credit may be awarded for this course upon successfully passing the respective exam.
Prerequisite	Passed Coordinate Algebra/GSE Algebra I, Analytic Geometry/GSE Geometry; and enrolled in Advanced Algebra/GSE Algebra II or above