

SCIENCE

- Course descriptions that are shaded are not being offered this school year.
- Students are required to earn 3 credits of science in the following areas:
 - Required courses – 2 credits – Students must complete all four courses listed below
 - Biology A – ½ credit
 - Chemistry A – ½ credit
 - Earth Science A – ½ credit
 - Physics A – ½ credit
 - Elective courses – 1 credit – Students must complete two of the courses listed below
 - Biology B – ½ credit
 - Chemistry B – ½ credit
 - Earth Science B – ½ credit
 - Physics B – ½ credit
 - Additional Information
 - Students who enroll in and successfully complete 1 credit in a Career and Technical Education (CTE) course can use that credit to fulfill the elective Science credit.
 - Students who enroll in and successfully complete AP Biology, AP Chemistry, or AP Physics can use those credits to fulfill the elective Science credit.
- AP Biology, AP Chemistry, AP Physics, Chemistry, Physics, and STEM courses may be able to count as math-related courses as long as they are taken in the student’s senior year and are not counted as Science credits.

Advanced Forensic Science

1 trimester

Grade Level: 11-12

Course # 2407

Prerequisite: Forensic Science A & B

Advanced Forensic Science will cover units that exceed the content taught in Forensic Science A & B. Units of study will include: Hair and Fibers, , DNA Analysis, Genetic Genealogy, Criminal Psychology, Ballistics, and Impression Evidence.

Agri-Science Leadership

1 trimester

Grade Level: 9 – 12

Course # 2601

Prerequisite: None

This course is intended for those students directly involved in the FFA as an officer, as a committee chairperson, or for students who plan to participate in a leadership or ag skills contest. Basic information regarding parliamentary procedure, organizational management, and prepared public speaking will be taught.

Anatomy/Physiology

2 trimesters

Grade Level: 10 – 12

Course # 2401

Prerequisites: C+ or better in

#2402

Biology

This course is designed for students interested in going into the medical field and will require time out of class to devote studying and learning complicated concepts. Anatomy and Physiology will assist students in developing knowledge required to pursue a career in nursing, human medicine, veterinary medicine or biotechnology. numerous dissections will take place throughout the second trimester..

AP Biology

3 trimesters

Grade Level: 10 - 12

Course # 2507

#2508

#2509

Prerequisites: Successful completion of Biology A and Chemistry A is encouraged.

The AP Biology course is designed to be the equivalent of a college introductory biology course. It will enrich the student's knowledge of biology and help students develop laboratory skills and techniques. It is based on the national Advanced Placement Program and students will be prepared to take the Advanced Placement test in. In this course Four big ideas will be covered:

- The process of evolution drives the diversity and unity of life.
- Biological systems utilize free energy and molecular building blocks to grow, reproduce, and maintain dynamic homeostasis.
- Living systems store, retrieve, transmit, and respond to information essential to life processes.
- Biological systems interact, and these systems and their interactions possess complex properties.

There will also be a focus on the following science practices: concept explanation, visual representations, questions and methods, representing and describing data, statistical tests and data analysis, and argumentation. All laboratory work will focus on science as a process and will be student-directed and inquiry based. A summer assignment is a requirement of the course. Students will be asked to complete this assignment during the month of August.

AP Chemistry

3 trimesters

Grade Level: 10 - 12

Course # 2501

#2502

#2503

Prerequisites: Successful completion of Chemistry A and should be through or enrolled in Algebra II

Advanced Placement Chemistry is a college level course for those interested in pursuing a career in the sciences. This class will be taught at a level equivalent to a first year college chemistry course. This is a rigorous course that will cover the four big ideas that have been outlined by the AP College Board

- **Scale, proportion, and quantity**
- **Structure and properties**
- **Transformations**
- **Energy**

Laboratory work is a necessary and vital component of this class and will be conducted weekly. In the laboratory setting students will be asked to make connections and show evidence of higher level thinking skills. A summer assignment is a requirement of the course. Students will be asked to complete this assignment during the month of August.

AP Environmental Science

3 trimesters

Grade Level: 10 - 12

Course #2513

#2514

#2515

Prerequisite: Biology A
Chemistry A

The AP Environmental Science course is designed to engage students with the scientific principles, concepts, and methodologies required to understand the interrelationships within the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. Environmental science is interdisciplinary, embracing topics from geology, biology, environmental studies, environmental science, chemistry, and geography.

AP Physics 1
Course # 2504
2505

2 trimesters

Grade Level: 11 - 12
Prerequisite: Physics A, Algebra 2
Recommended: Physics B,

AP Physics 1 is designed to be the equivalent of an introductory math-based college freshmen course in Kinematics. Units of study include mechanics, energy, momentum, circular motion, gravitational forces, and fluid forces. The ultimate goal of this course is to prepare students to be successful on the AP Physics1 exam at the end of the year.

Astronomy
Course # 2103

1 trimester

Grade Level: 10 - 12
Prerequisite: Earth Science A

This course is pending approval from the Board of Education

Explore the wonders of the cosmos where students embark on a fascinating journey through the vast expanse of the universe. From the study of celestial bodies and their motions to the understanding of fundamental astronomical principles, this course provides a comprehensive overview of the cosmos. Students will delve into topics such as the formation of stars and galaxies, the mysteries of dark matter and dark energy, and the possibilities of life existing elsewhere in the universe. Through a combination of hands-on observations, interactive simulations, and engaging discussions, participants will develop a profound appreciation for the beauty and complexity of the night sky. This course not only nurtures scientific inquiry and critical thinking but also encourages a sense of wonder and curiosity about the mysteries that lie beyond our earthly domain.

Biology A
Course # 2205

1 trimester

Grade Level: 9 - 11
Prerequisite: None

Biology A is designed to give students an overall view of Heredity: Inheritance and Variation of Traits. The major areas of study are aligned with the Next Generation Science Standards. Units of study will include 1) DNA Structure and Function investigating protein synthesis, variation in organisms and mutations 2) Mitosis, Meiosis and Cell Differentiation where students will explore the process and purpose of cell division as well as the process where cells develop into specific somatic cells 3) Mendelian and Modern Genetics exploring the inheritance of traits and sources of genetic variation.

Biology B
Course # 2206

1 trimester

Grade Level: 9 - 11
Prerequisite: Biology A

Biology B is designed to give students an overall view of Environmental Biology. The major areas of study are aligned with the Next Generation Science Standards. Units of study will include 1) Matter and energy in ecosystems, with specific areas of study on photosynthesis, cellular respiration, matter and energy cycles 2) Interdependent relationships in Ecosystems, with an emphasis on biodiversity and carrying capacity 3) Human Activity and Biodiversity, with an emphasis on reducing human impacts 4) Natural Selection looking at variation of traits, adaptations of populations, speciation and extinction and 5) Evolution of populations over time.

Botany & Greenhouse Management
Course # 2606
2607
2608

3 trimesters

Grade Level: 9 - 12
Prerequisite: None

This course provides students awesome hands on experiential learning opportunities. Students will learn plant anatomy, physiology, soils and plant nutrition, tree and wildflower identification, maple syrup production, forestry and greenhouse management. Hands-on experience in our greenhouse, woodlot and maple syrup production operation will take learning out of the classroom into real life scenarios. Students in this class will have opportunities to improve leadership, personal growth and practical skills through participation in the Mason FFA Chapter.

Chemistry A

1 trimester

Grade Level: 9 – 11

Course # 2301

This course will explore the basic foundations of the chemical world. This course will focus on experiencing and explaining phenomena, participating in class discussions, laboratory investigations, and problem solving activities. A scientific calculator is needed for this course.

Chemistry B

1 trimester

Grade Level: 9 – 11

Course # 2302

Prerequisites: Chemistry A

This course is aimed at students who are looking to advance their understanding of chemical concepts. The course will focus on experiencing and explaining phenomena, participating in class discussions, laboratory investigations, and problem solving activities. A scientific calculator is needed for this course.

Earth Science A

1 trimester

Grade Level: 9-11

Course # 2101

Prerequisites: None

Embark on a fascinating journey through the cosmos with Earth Science A! Delve into the mysteries of our universe as we explore extraordinary phenomena, from the awe-inspiring explosion of stars to the mind-boggling expansion of space and the captivating patterns of our solar system. As we shift our focus to Earth, you'll gain insights into the subtle yet profound influence of solar energy, shaping the patterns of our seasons. The course culminates in an in-depth exploration of climate change, where you'll critically analyze scientific evidence, unraveling the intricate ways Earth's systems are evolving and interconnecting. While no prerequisites are necessary, students who have completed Chemistry A will find a deeper appreciation for the material. Understanding the basic components of atoms will enhance your grasp of the topics discussed, providing a more comprehensive perspective on the intriguing concepts presented in Earth Science A. Prepare for a stimulating academic experience as we delve into the mysteries of the universe and unravel the complex dynamics of our own planet. Earth Science A offers a thoughtful exploration into some of the wonders of science, encouraging you to question, learn, and discover.

Earth Science B

1 trimester

Grade Level: 10-12

Course # 2102

Prerequisites: Earth Science A

Welcome to Earth Science B – the next step in your exploration of our planet's wonders! Building on the knowledge from Earth Science A, this course delves deeper into Earth's intricate systems. We begin by examining Earth's interconnected systems, understanding their delicate balance. Delve into Earth's geologic history, tracing the planet's transformation over time, from ancient events to the evolution of ecosystems. Addressing contemporary challenges, we explore pressing environmental issues and the human impact on Earth's different systems. While engaging in meaningful discussions about the future of our planet, we'll hone our analytical skills by constructing scientific models that visualize complex interactions. This course isn't just an academic endeavor, it's your opportunity to become an informed learner of Earth's future. Get ready for a trimester of exploration, inquiry, and empowerment.

Environmental Science

1 trimester

Grade Level: 9-12

Course #2603

Prerequisites: None

This elective class is an introduction to how humans interact with the environment in a wide range of capacities. Students will explore the science behind food plots, composting, pollution, plant and fungi identification, land management, and national park usage. Students will also investigate alternative energies and modern methods used to tackle environmental problems. Hands-on projects will be utilized to help students understand the science behind how humans survive and interact with the environment on a day to day basis.

Forensic Science

2 trimesters

Grade Level: 11 - 12

Course # 2403
2404Prerequisite: Chemistry and/or
Physics

Forensic Science is the application of science to the law. The study of science offers the knowledge and technology needed for the use of evidence in both criminal and civil cases. Problem solving will be the focus for this science course. Students will be expected to work in teams, theorize, design experiments, research forensic methodologies, analyze and synthesize information, and make conclusions based on evidence.

STEM (Science, Tech. Engineering, and Math)

1 trimester

Grade Level: 10-12

Course # 2107

Prerequisites: Algebra 1

Science, Technology, Engineering and Math (STEM) is a project and lab based course where students will have the opportunity to explore and experience the process of engineering. The projects and labs are inspired by the sciences while integrating math and technology throughout. This course will focus on the process of defining a problem, designing a solution, constructing prototypes, and redesigning prototypes to improve results.

Physics A

1 trimester

Grade Level: 9 - 11

Course # 2306

Prerequisite: Algebra 1

As an introduction to Physics course, students in this course will study motion in one dimension, Newton's laws, work and energy, electric circuits, and waves and sound. Students will have many lab opportunities to apply the ideas they are learning and will be asked to solve real-world problems as well. Use of mathematics is not a primary aim of the course, but mathematical thinking and reasoning is very important, and students will be expected to apply many ideas from Algebra 1.

Physics B

1 trimester

Grade Level: 9 - 12

Course # 2307

Prerequisite: Algebra 1, Geometry and
Physics A

This course is aimed at students who are looking to advance their understanding of the physical sciences. Physics B aims to add to, and to broaden, the ideas learned in Physics A. Students will study motion in two dimensions, momentum, gravitational forces, electrostatics, magnetism and electromagnetism.

Physiology of Life

1 trimester

Grade Level: 10-12

Course #2406

Prerequisites: Biology

Physiology of Life provides an opportunity for students to learn more about their personal health as well as a more in-depth overview of health related topics for students who are considering pursuing a medical occupation post high school. Over the course of one trimester, students will interact with content that will provide a better understanding about basic homeostatic parameters such as blood pressure and components of blood. Topics of study will include prevention and screening of disease, and the development and management of several common health conditions such as diabetes, fatty liver disease, lung disease and heart disease.

Zoology & Veterinary Science

3 trimesters

Grade Level: 9 - 12

Course # 2610

Prerequisite: None

2611

2612

This course provides students awesome hands on experiential learning opportunities. All aspects of animal anatomy, physiology and health will be taught in the classroom and brought to life with experiential learning opportunities. Experiential projects include incubation of eggs, raising broiler chickens, managing a small flock of sheep and managing pregnant pigs through the birthing and nursing process. Students in this class will have opportunities to improve leadership, personal growth and practical skills through participation in the Mason FFA Chapter.