

SCIENCE INFORMATION

The following courses are the courses that we are recommending being offered for the following school year. The science teachers recommend that the courses be taken at specific times in the high school career. These recommendations have been listed as well. Some courses are considered upper level courses and are for upperclassmen who have completed two other science courses. Several courses have a prerequisite. See the section titled Course Descriptions if you are unsure what a course is. You can email Mrs. Christina Dotson (cdotson@wcpss.net) if you have questions. She will forward them to the appropriate teacher if she can't answer them. This page is divided into three sections. The first part is a just a brief description of the courses offered. If you want a detailed description, please scan down to the end.

PLEASE REMEMBER: As Leesville Teachers, we have specific teacher recommendations for certain classes. We feel that these "pre-recommendations" will help the student. Please pay close attention to this when enrolling in classes.

Also, with the block schedules, you will be able to take multiple science courses throughout your High School years. The more science courses you have, the better your transcript looks.

We KNOW that Earth Science and Biology are not math based courses. However, Chemistry and Physics are; thus, requiring certain math skills. We have based our "class pathways" on the math levels to make sure your child is in the right math at the right time and missing a year/semester of science due to not having the math skills.

COURSE DESCRIPTIONS: A brief summary of the science courses taught at Leesville as well as the teachers to contact if you have questions. This page is extremely helpful when registering for classes.

1. Earth/Environmental Science-suggested for 9th graders if they are taking the recommended math which is Common Core I (or any math lower than or equal to). An Earth Science course is required for graduation. This course is recommended for lower classmen only.
2. Honors Earth/Environmental Science- This course is recommended for 9th graders who want to challenge themselves by taking an advanced science course. Due to the curriculum layout, it is recommended that this course be taken prior to Honors Biology, or any other science course, as information obtained through Earth / Environmental Science feeds into concepts of higher level sciences. This course is recommended for freshmen who want to challenge themselves by taking an advanced science course. An Earth / Environmental science course is required for graduation.
3. AP Earth/Environmental Science

4. Astronomy- Earth Science is a prerequisite (grade of B or better is recommended; also teacher recommends math level of Common Core II or higher).
5. Academic Biology- recommended math is Common Core Math Level II
6. Honors Biology- recommended math is Common Core Math Level II or higher
7. Academic Anatomy and Physiology- Biology is a prerequisite (a completion grade of B or better is recommended)
8. Honors Anatomy and Physiology- Biology and Chemistry are prerequisites (a completion grade of B or better in both courses is recommended)
9. AP Biology- students must have completed both Advanced Biology and Advanced Chemistry with a grade of B or better. Students enrolling must also enroll in Honors Research Methods and Techniques for a yearlong experience.
10. Honors Research Methods and Techniques- only for students enrolling in AP Biology
11. Marine Ecology- Biology is a prerequisite. (a completion grade of B or better is recommended)
12. Academic Chemistry- recommended math- must be a math level higher the Common Core Level II). Concepts taught in Chemistry are often on a higher math level. Teachers strongly recommend a math higher than Common Core II.
13. Honors Chemistry- recommended math- must be a math level higher the Common Core Level II. (Advanced math is highly recommended by the Leesville Science Dept.)
14. AP Chemistry- students must have completed Advanced Chemistry with a grade of B or better. Also students must be enrolled in a math level higher than Common Core II.
15. Academic Physical Science-recommended math level is Common Core Math Level I or higher. This is class for upperclassmen and is designed as a THIRD year science (not a Freshman/beginners class) for students who need the Physical Science requirement to graduate.
16. Academic Physics- - recommended math is a math level higher than Common Core II (Completion of Common Core III or equal to is recommended)
17. AP Physics I (in place of Honors Physics)- - recommended math is a math higher than Common Core III (prior completion of Common Core III is recommended by teacher)
18. AP Physics II- students must have completed AP Physics I, Advanced Chemistry, and an advanced math with a grade of B or better.
19. Honors Forensic Science- students must have completed Biology and Chemistry with a recommended grade of B or better.
20. Principals of Human Genetics- students must have completed Biology. We recommend a grade of B or better.

SAMPLE SCIENCE OPTIONS

1. Earth/Environmental Science, Biology, Chemistry, another science of choice
2. Earth/Environmental Science, Biology, Physical Science, another science of choice
3. Biology, Chemistry, an Adv. Earth Science, another science of choice

(NOTE: levels of Biology and Chemistry depend on Math levels)

WHAT SCIENCE COURSE SHOULD I TAKE THIS YEAR?

We are all very excited about the Science field, and we always encourage students to take as many science courses as possible. Therefore, we wanted to give you a short description of the Science courses that are taught here at Leesville.

CHEMISTRY

Chemistry is the study of the composition and properties of matter. The course provides an introduction to the theories concerning the structure of matter and includes mathematical problems that illustrate the theories. Laboratory experiences and demonstrations are an integral part of the course. At the end of the school year, the students are required to take the Common Core Exam in Chemistry.

As stated above, mathematical problems are used often to illustrate theories. Therefore, the student's math level is incredibly important when it comes to choosing a chemistry course, it is recommended that all students who enroll in a Chemistry course should also enroll in a math higher than Common Core II (or have already taken it,). Students who enroll in Academic Chemistry should be enrolled in an academic math higher than Common Core II. Students who enroll Advanced Chemistry should also be enrolled in (or already taken) an advanced math higher than Common Core II. You must be at a math level higher than Common Core Math II.

If you have further questions regarding the differences between Advanced and Academic Chemistry, please contact) or Mrs. S. Duncan (ssduncan@wcpss.net).

AP CHEMISTRY

This is a college level course in which students study the basic principles and concepts of chemistry. This course is designed like a "General Chemistry" course that would be taught at a college or university. Topics include chemical composition, stoichiometry, atomic structures, bonding, molecular structure, chemical reactions, states of matter, and solutions. The students may choose to take the AP Chemistry Exam at the end of the year; depending on the student's grade on this exam, the student may receive credit at a university or college for the course.

The recommended prerequisites for this course:

1. B average or above in Advanced Chemistry
2. B average or above in all math classes (preferably Advanced)
3. Enrollment in a math class higher than Common Core III.

4. Has talked to the teacher!

For more details, please contact Mrs. S. Duncan at ssduncan@wcpss.net

BIOLOGY

Biology is the study of life. This course is designed to develop student understanding of biological concepts and principles and promote an understanding of plant and animal processes from the cellular to the multicellular level. Laboratory work and dissections are an important part of the course. Students are required to take the North Carolina End-Of-Course test in Biology.

Since Chemistry is often the next course taken after Biology, it is important to consider math levels when signing up for Biology courses. Chemistry is a math based course (please see Chemistry Course description above); therefore, students who are enrolling in Biology should also be enrolled in Common Core Level II.

Advanced Biology students cover basic concepts of Biology but in greater depth than Academic Biology students. Students utilize critical thinking skills in class work and lab activities and participate in a semester long Science Fair project. Students are held to very high standards in both written and verbal expression. In order to do well, students in Advanced Biology should be able to follow precise directions, study every night, be self-motivated, and be willing to come for extra help when needed. Questions concerning Advanced vs. Academic Biology can be directed either to Mrs. C. Dotson (cdotson@wcpss.net) or Ms. C. Dobbin (cdobbin@wcpss.net)

AP BIOLOGY

Students study the basic principles and concepts covered in an introductory "General Biology" college-level course. Topics include the structure and function of cells and organisms, biotechnology, biochemistry, the organization, requirements and development of living systems, and heredity and evolution. Students are provided in-depth laboratory experiences (there are 12 labs required by the AP Board in addition to the other labs that will be performed). The students may choose to take the AP Biology Exam at the end of the year; depending on the student's grade on this exam, the student may receive credit at a university or college for the course.

This is a demanding course, and the students will be required to complete a section reading every evening. This is very important and will help them understand the concepts that will

be covered in class. Students are also expected to do several "outside" assignments that will not be covered in class.

Due to the subject matter that AP Biology requires and the detailed labs, AP Biology is paired up with Honors Research Methods and Techniques. Students need to enroll in both courses in order to have a yearlong AP Biology experience.

Students may find Anatomy helpful as well.

The recommended prerequisites for this course:

1. B average or above in Advanced Biology
2. B average or above in Advanced Chemistry
3. Enrollment in a math class higher than Advanced Algebra 11.

For more details, please contact Mrs. C. Dobbin at cdobbin@wcpss.net

ANATOMY AND PHYSIOLOGY

Anatomy and Physiology is the study of the structure and function of the human body. It is for those students who have a deep interest in Biology. This class studies each body system in depth in order to learn what makes each part special. During the course of study, the students perform several labs designed to test their knowledge of the human body. Dissections are completed in this course.

The Advanced and Academic courses cover the same basic material, the human body; however, the advanced students are provided a more in depth study of the human body with an emphasis on the Biochemical reactions that take place. Therefore, Chemistry is a prerequisite for Advanced Anatomy. The Advanced students are also expected to conduct independent research as well as a bit of outside reading and independent study.

Biology is a prerequisite for this course, and a grade of B or better in Biology is highly recommended. For those students who wish to sign up for Advanced Anatomy, completion of Chemistry is required with a recommended grade of B or better.

For questions concerning Anatomy and Physiology, please contact C. Dotson at cdotson@wcpss.net

MARINE ECOLOGY

MARINE ECOLOGY studies the interrelationships among marine organisms and the physical, chemical, geological, and biological factors in their environment are the focus of this course.

The importance of the marine environment to life on earth is stressed. North Carolina's coastal processes are studied in detail. Laboratory and field experiences are major components of the course. This course is recommended as a THIRD level science. This means that you must have completed Biology and another science course before you may enroll in this course. We suggest an average of B or better in Biology and another science course.

For questions concerning Marine Ecology, please contact cdotson at cdotson@wcpss.net

FORENSIC SCIENCE

FORENSIC SCIENCE: In this course, the student will be examining the role of the forensic scientist. Students will experience the application of the pure sciences as they examine the evidence of various forensic situations. The activities will include traditional methods in addition to modern biotechnical techniques. This course is recommended as a THIRD level science. This means that you must have completed BIOLOGY AND CHEMISTRY before you may enroll in this course. We suggest an average of B or better in Biology and another science course.

For questions concerning Forensic Science, please contact K. Collins at kcollins@wcpss.net

PRINCIPALS OF HUMAN GENETICS

PRINCIPALS OF HUMAN GENETICS is designed to examine the transmission of traits from generation to generation with an emphasis on patterns of inheritance in humans. Students will study issues generated by biotechnology and how new technology is transforming research, industry, agriculture and our everyday lives, from the medical tests we take to the food we eat. This course is recommended as an upper level science. You must have completed Biology before you may enroll in this course. We suggest an average of B or better in Biology and another science course.

For questions concerning Human Genetics, please contact cdotson at cdotson@wcpss.net

PHYSICAL SCIENCE

The concepts of physics and chemistry are taught by using both laboratory approaches and inquiry teaching. Students use their mathematical skills in the applications of science. Students are required to take the Common Exam in Physical Science.

For questions concerning Physical Science, please contact M. Self at rstone@wcpss.net

EARTH/ENVIRONMENTAL SCIENCE

Academic Earth/Environmental Science:

This course will focus on inquiry into the functions of the earth's systems. Emphasis is placed on matter, energy, crustal dynamics, environmental awareness, materials availability, and the cycles that circulate energy and material through the earth system. The students will also study plate tectonics, rock and mineral formation, and landforms. Laboratory work is a major component of the course. This course is recommended for Ninth graders who are enrolled in Common Core Level One. However, please note that any student in **ANY grade level** may enroll in this course.

Advanced Earth/Environmental Science:

This course will focus on inquiry into the functions of the Earth's primary systems. Emphasis is placed on crustal dynamics, environmental awareness and availability of resources, and the cycles that circulate Earth's energy and materials through the systems. Laboratory work is a major component of the course. It is strongly encouraged that incoming freshmen first enroll in Honors Level Earth / Environmental Science, prior to additional science courses, as the curriculum lays a solid foundation to terms and concepts that will be discussed in biology, chemistry, physical science, and AP Environmental Science.

For further information concerning Earth Science, please contact Dr. Stone (rstone@wcpss.net)

AP. ENVIRONMENTAL SCIENCE

The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships 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. The course focus is on the "real science" behind environmental problems and issues. Laboratory and field study are an important element of the course. It is recommended that students successfully complete at least two years of high school laboratory science (one year of life science and one year of physical science, such as chemistry) before enrolling in this rigorous course. Due to the quantitative analysis that is required in the course, students should also have taken at least one year of algebra. Also desirable, but not necessary, is a course in earth science.

Students are to understand that they will be required to complete a summer reading packet and assignment booklet. There will be a test on this material the first week of school.

The prerequisites for this course: Earth Science (Advanced is recommended) and Biology. This course is designed to be a third level course.

For further questions, please contact Dr. Stone at rstone@wcpss.net.

ASTRONOMY

Astronomy studies the underlying principles of life, earth, and physical science are integrated in this study of the universe. Historical astronomy, the solar system, comets, constellations, extraterrestrial life, and the evolution of stars are the major topics of study. Observational astronomy skills and critical thinking are fostered through the use of laboratory and field activities. This is a third level science designed to be taken AFTER having already passed Biology and Earth Science. The teacher of this course recommends that the students have already taken Common Core II as well.

For further questions, please contact Tina Stone at cdotson@wcpss.net.

PHYSICS

Students develop a general understanding of the mathematical and motion oriented study of matter and energy. Mechanics, heat, light, electricity, magnetism, gravity, and nuclear energy will be the major topics of study. Students who wish to study these topics in great detail should enroll in AP Physics I.

DUE TO THE CHANGES IN THE AP PHYSICS CURRICULUM, WE NO LONGER WILL BE OFFERING HONORS PHYSICS. STUDENTS WILL ENROLL IN AP PHYSICS 1 INSTEAD. THIS NEW AP COURSE DOES NOT REQUIRE ANY PRIOR PHYSICS COURSE AND COVERS MUCH OF THE SAME MATERIAL THAT WAS OFFERED IN AN HONORS PHYSICS COURSE.

Academic Physics:

In this class, students will explore physics, the study of matter and energy. The first portion of the course will include an introduction to kinematics, the study of motion, and dynamics, and the study of forces. Other topics to be covered are as follows: energy, electricity, magnetism, waves, kinetic theory, thermodynamics, and nuclear physics. The class will begin with the assumption that all students have successfully completed a math course higher than Common Core II (at least 3 years of math). Students in Advanced Math and/or those demonstrating competency in trigonometry will be at an advantage to other students. Students need to have a scientific calculator, metric ruler, and protractor for class.

AP Physics 1

This class will follow the Physics Standard Course of Study as outlined by the state. 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. The class will begin with the assumption that students understand

equation manipulation, dimensional analysis, and basic trigonometric functions. Students need to have a scientific calculator, metric ruler, and protractor for class. This high level of math is required for the enrichment and independent study activities. Assignments will be designed to allow the students to demonstrate advanced competency and application of the information.

The students may choose to take the AP Physics Exam at the end of the year; depending on the student's grade on this exam, the student may receive credit at a university or college for the course

For questions concerning Physics, please contact Mr. C. Stephenson (cstephenson@wcpss.net)

AP PHYSICS 2

AP Physics 2: Algebra-Based is the equivalent to a second-semester college course in algebra-based physics. The course covers fluid mechanics; thermodynamics; electricity and magnetism; optics; and atomic and nuclear physics. The students may choose to take the AP Physics Exam at the end of the year; depending on the student's grade on this exam, the student may receive credit at a university or college for the course.

This class consists of students who after completing the first part of physics wish to study the topics more in-depth. Students must be able to work independently on challenging problems. Also students will be expected to explain with equations and words how the concepts work. For example, this class has designed lessons and activities for the Earth Science classes. The AP students went into the classroom and worked to explain the physics behind planetary motion with Kepler's Laws of Motion and the Law of Universal Gravitation.

The recommended prerequisites for this course:

1. B average or above in AP Physics I
2. B average or above in Advanced Chemistry
3. B average or above an advanced Common Core III.
4. Enrollment in an advanced math higher than Common Core III.
5. At this time, math course descriptions are changing. If you have any questions, please email.

For more information, please contact Mr. Stephenson at cstephenson@wcpss.net