SCIENCE

The 9-12 Science program at Normal Community High School and Normal Community West High School is designed to enable the student to expand upon the K-8 Science work previously done that included a mixture of both Biological, Physical, Earth, and Space Science studies. Each Science course has three basic and very important components:

1. Lab experiences where the student explores the hands-on side of Science;
2. The knowledge area where basic concepts are studied and explained, and
3. The application of Science to the real world and the impact of Science on society.

With a goal to provide the best fundamental learning to support future student endeavors, the Science Department has a variety of course options to meet student needs. The Science Department course offerings are designed to provide a solid base background in multiple Science areas to enable students to have the appropriate course work for future needs in schooling, work, and home applications.

Any student decision regarding course sequences should be made in conjunction with parent/guardian, teacher, and counselor discussions. The minimum requirement for graduation in Unit 5 is for each student to complete two years of Science. The department does not require specific courses to be taken. However, several courses do have prerequisites.

AFTER HIGH SCHOOL PLANS:

	Year in School		
	9	**10**	**11/12**	**12**
Job/Military:	Biology I	Energy & Matter AND Introductory Physical Science	Chemistry I OR Science Research	
Community College/ Apprenticeship:	Biology I OR Honors Biology	Chemistry I OR Energy & Matter AND Introductory Physical Science	Chemistry II OR Biology II OR Science Research	Science Research
Four Year College:	Biology I OR Honors Biology	Chemistry I OR Honors Chemistry	Physics I AND/OR Biology II OR Chemistry II OR AP Chemistry	AP Chemistry AP Biology OR Physics II OR Science Research
Four Year College Sci. Related Major:	Biology I OR Honors Biology	Chemistry I OR Honors Chemistry	Physics I AND/OR Biology II AND/OR Chemistry II AND/OR AP Chemistry Science Research	Physics II AP Biology

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Answers to the most common questions regarding Science course selection:

What are the differences between honors and regular sections of Biology and Chemistry?

Answer: Each course has the same basic concepts and goals guiding the overall framework of the subject. The honors courses explore concepts in a different manner that involves more in-depth study of these basic principles. Also, the honors courses have weighted grades. Each course provides a good science background.

Why do some courses have prerequisites?

Answer: Over many years' experience, the Science Department has determined the minimum prerequisites for students experience that can lead to success in a particular course. These minimum prerequisites are listed to help guide students in course choices.

What is the best way to predict success in Chemistry I?

Answer: The course that most clearly predicts future performance in Chemistry I is Algebra. So, the grade received as an eighth grader or a freshman in Algebra should serve as a guide in Chemistry I selection.

I really want to take Chemistry I but had a lot of trouble in Algebra. Can I still take Chemistry?

Answer: The best solution in this case is to wait until the junior or senior year when the student will have had the opportunity to take additional Algebra (as a sophomore or junior) and therefore be better prepared for the work in Chemistry I.

Why not offer specialized courses with the three areas of Biology, Chemistry, and Physics?

Answer: The teachers in Unit 5 feel strongly that the high school experience should provide a broad background in the fundamental Science areas that will more readily enable the student to take specialized training later in the world of work or college.

What is the difference between Biology II and AP Biology?
What is the difference between Chemistry II and AP Chemistry?

Answer: Each of these courses provides a solid second year high school experience and emphasize quality lab experiences. The AP curriculum is based upon an established curriculum that is intended to provide the equivalent background to studying Biology or Chemistry in a college freshman course.

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SCI 103 BIOLOGY I
(Yearly 1 Credit) (9, 10, 11, 12)
The study of life in all its many and varied forms. New discoveries, concepts and investigations are studied along with many activities in the laboratory. Life processes are the central theme of the program and through this all levels of plant and animal life are investigated in detail.

SCI 203 HONORS BIOLOGY
(Yearly 1 Credit) (9, 10) (Honors Level)
Prerequisite: Grade of A in 8th Grade Math and Science Courses; or Recommendation of Teachers/Counselors
This is a biology program that will challenge the mature student. Generally, students work in small groups of two or three and often independently. Peer interaction is encouraged. This program is based upon fundamental life sciences concepts. Open-ended investigations are utilized to stimulate and develop critical thinking and problem solving skills. Self-motivation is required of the student who plans to be successful in this course. Real life connections to the curriculum are stressed as are inquiry based, hands-on laboratory activities.

SCI 252 ENERGY AND MATTER STUDIES
(Semester 1/2 Credit) (10, 11, 12)
Prerequisite: None - This course is not open to students who have passed first semester Chemistry I.
This course explores the relationships between matter and energy. Topics to be discussed include: the properties of matter, the ways in which matter can change, and how energy is related to matter and its phases. Students will also learn about elements, atoms and their combination, chemical nomenclature, chemical reactions, and a variety of measurement procedures. The course will focus on practical applications of these concepts and how that knowledge of energy and matter is pertinent to everyday life. This course is designed primarily for non-college bound students. Offered second semester only.

SCI 301 INTRODUCTORY PHYSICAL SCIENCE
(Semester 1/2 Credit) (10, 11, 12)
Through the use of lecture, class discussions, and laboratory explorations, this course introduces the interrelationships of the physical sciences. Non-theoretical topics and issues of current interest will be emphasized and presented in a practical setting. Topics to be discussed include: density, gravity, motion, force, energy, light, sound, heat, and electricity. A variety of machines will be used to help illustrate the various concepts.. This course is designed primarily for non-college bound students. Offered first semester only.

SCI 331 BIOLOGICAL SCIENCE APPLICATIONS
AGR 331 IN AGRICULTURE-PLANT SCIENCE
(Semester 1/2 Credit) (11, 12)
Prerequisites: Biology I and Algebra
BSAA is designed to reinforce and extend students' understanding of science by associating basic scientific principles and concepts with relevant applications in agriculture. Students will examine major phases of plant growth for agricultural management decisions. This course will use numerous laboratory experiments and exercises as the main instruction tool. Topics of instruction will include: environmental regulation, chemical applications, hydroponics, seed inoculation and growth regulation. Students can also establish a supervised agricultural experience program and participate in FFA activities. This course should be taken in combination BSAAII - Animal Science.

SCI 332 BIOLOGICAL SCIENCE APPLICATIONS
AGR 332 IN AGRICULTURE - ANIMAL SCIENCE - BSAA II
(Semester 1/2 Credit) (11, 12)
Prerequisites: BSAA I, Biology I and Algebra
BSAA II is an extension of BSAA I. This course is designed to reinforce and extend students' understanding of science by associating basic scientific principles and concepts with relevant applications in agriculture. Students will examine major phases of animal agriculture and specific biological science concepts that govern management decisions in the animal industry. This course will use numerous laboratory experiments and exercises as the main instruction tool. Topics of instruction will include: animal genetics and biotechnology; hatching, nutrition, and pecking order of chicks; vital sign; growth hormones; artificial insemination; aquaculture; and processing of animal products. Students can also establish a supervised agricultural experience program and participate in FFA activities. This course should be taken in combination with BSAA I - Plant Science.

SCI 353 BIOLOGY II
(Yearly 1 Credit) (11, 12)
Prerequisite: C or Above in Biology I or Honors Biology and Chemistry I or Honors Chemistry
This course is designed for Seniors and Juniors who are college bound and especially those intending a possible career in a science related field. The course is structured to permit exploration of various major biological concepts

through class, laboratory, and library research. Students will conduct major projects throughout their study as they explore the many facets of biological science. Quality learning and independent research will be two major goals which necessitates regular attendance. Topics of current interest, recent literature, and social implications of new technology will be studied and discussed. Those who reach a high level of proficiency may be able to obtain college credit or omit a beginning level biology course through testing at their college. Students may also find that they are better prepared for additional college courses.

SCI 403 ADVANCED PLACEMENT BIOLOGY
(Yearly 1 Credit) (11, 12)
Prerequisite: Biology I or Honors Biology, and Chemistry I or Honors Chemistry, and Physics I or Current Enrollment in Physics I; or Consent of Associate Principal
This course is designed as an intense level biology course that has the equivalent of the materials that would be covered in freshman level college classes. Daily studying and additional lab time are required for success in this class. Topics included will be: molecules and cells, genetics and evolution, and organisms and populations. Students enrolled in this course will have the opportunity to take the Advanced Placement exam in May at their own expense. Students receiving a high grade on the exam may be eligible for college credit depending on the score and college. NOTE: Students enrolling in AP (Advanced Placement) BIOLOGY are not eligible to enroll in ADVANCED BIOLOGY.

SCI 453 CHEMISTRY I
(Yearly 1 Credit) (10, 11, 12)
Prerequisite: C or Above in Algebra, Algebra 8, or Completion of Energy & Matter/IPS and Biology or Consent of Associate Principal
This course deals with matter and energy as well as the changes that can take place through chemical interaction. Concepts learned in the classroom are supplemented by laboratory exercises. Successful completion of this chemistry course will give the college-bound student a better understanding of the technical world in which he/she lives.

SCI 503 HONORS CHEMISTRY
(Yearly 1 Credit) (10, 11, 12) (Honors Level)
Prerequisite: A or B in Algebra or Algebra 8
This course deals with matter and energy as well as the changes that can take place through chemical interaction. The course is designed for the college-bound student who desires a more challenging level of study. Students are guided through the course with class discussions, individual work and laboratory investigations.

SCI 553 CHEMISTRY II
(Yearly 1 Credit) (11, 12)
Prerequisite: C or Better in Chemistry I or Honors Chemistry
This second course in chemistry is designed for Juniors and Seniors who either have an interest in chemistry or plan to pursue a science-related career. In this course, students will gain extensive exposure to common chemistry laboratory procedures, applications of chemical concepts and an introduction to organic chemistry. Students enrolling in this course will find themselves better prepared for their first year of college chemistry.

SCI 603 ADVANCED PLACEMENT CHEMISTRY
(Yearly 1 Credit) (11, 12)
Prerequisite: A or B in Chemistry I or Honors Chemistry; Credit or Current Enrollment in Physics I; or Consent of Associate Principal
This course is equivalent to a first-year college chemistry class. Students should have a strong interest in chemistry. The course covers topics found on the AP Chemistry exam that students may choose to take in the spring. Exam location and costs will be made available during the year. Those who reach a high level of proficiency in this course should be able to gain advanced standing in college chemistry, depending on college requirements.
NOTE: Students enrolling in AP Chemistry are not eligible to enroll in Advanced Chemistry.

SCI 653 PHYSICS I
(Yearly 1 Credit) (10*, 11, 12)
Prerequisite: A or B in Geometry or A, B or C in Honors Geometry. Credit or Current Enrollment in Chemistry I or Honors Chemistry.
*Students who have received an A in Algebra or Honors Algebra 2 may take Physics as a Sophomore.
Physics is a laboratory course that examines the physical laws and principles that govern nature. The general areas that are studied are: motion, forces, energy, waves, optics, electricity, and nuclear energy. Emphasis will be placed on understanding the concepts of physics and then to analyze the concepts mathematically. The problem solving skills developed in this course are transferable to many areas outside of physics.

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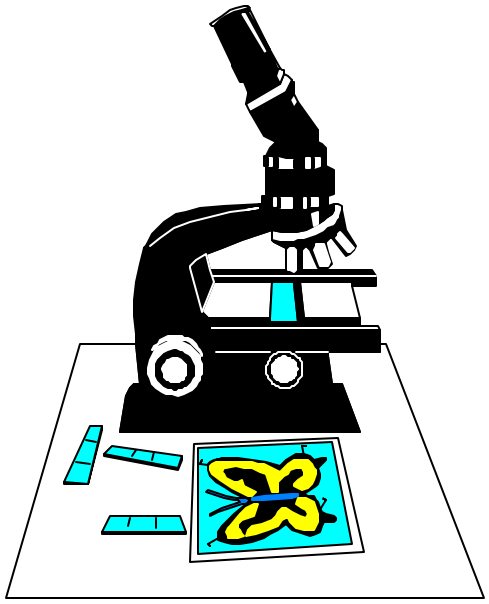
SCI 703 PHYSICS II
(Yearly 1 Credit) (11, 12)
Prerequisite: A or B in Physics I, Chemistry I or Honors Chemistry is Highly Recommended
Advanced Physics is a second year course in Physics designed for highly motivated, college-bound students who are interested in pursuing a career in science or in a science-related field. The course is structured to allow for in-depth study of advanced topics in physics with an emphasis placed on laboratory work. Students taking this course will have the opportunity to become highly proficient in concept development and problem solving.

SCI 751/752 SCIENCE RESEARCH
(One Semester 1/2 Credit - May Enroll for Two Consecutive Semesters) (11, 12)
Prerequisites: Two Years of Science (C or Above)
The science research course is an interdisciplinary course designed to introduce students to the process of science research and development. This course will include research skills, instrumentation, computer techniques/ simulations, scientific writing, and both guided and independent laboratory based and computer-based research projects.