VERIFY OFFERINGS AT SCHOOL SITE

READING

Frequently Asked Questions About Reading

HOW CAN STUDENTS FIND OUT IF THEY MET THE STANDARDS FOR READING ON THE AIMS TEST? **Students may check with the registrar.**

DOES READING COUNT FOR ENGLISH CREDIT? **No. Reading courses count for elective credit only, English credit is given only for those courses that have an 'EN' prefix.**

SCIENCE

The Arizona State Board of Education requires that a Science AIMS test is to be administered to 8th grade students and at the end of a high school Biology course (9th or 10th grade).

*Note: Courses that will meet the entrance/competency requirements for Arizona universities are marked with an asterisk.**

SUBJECT AREA GOAL:

The student will demonstrate an understanding of scientific methods of inquiry and apply them to the study of various branches of science, as well as to life situations.

ESSENTIAL SKILLS:

The student will:

- Solve simple, everyday problems using a variety of methods
- Interpret, synthesize, and apply information provided by data tables, charts and graphs
- Set up and carry out biological, Earth science, chemistry or physics experiments
- Relate an aspect of the science studied in terms of practical implications for everyday life

*SC 09 Essential Elements of Science

Difficulty: Average 9th Grade = 2 Sem. — 1 Physical Science Credit

SC 09 is the entry level science course for high school and provides the conceptual foundation for the entire MPS high school science curriculum. Students in SC 09 receive instruction and practice in developing and refining scientific skills and methods that are prerequisites for success in subsequent high school science courses. Using mostly chemistry and physics concepts as a framework, students discover and collect evidence that supports the atomic/ molecular theory of matter. These principles lay the groundwork for understanding all biological and chemical relationships. Topics included in this class are scientific processes, the nature and history of science, earth science, basic physics and chemistry. *Physical Science.* This course is considered an integrated science course in meeting the General Arizona University Entrance Requirements (see page 14).

*SC 33 Earth and Space Science

Difficulty: Average 2 Sem. — 1 Science Credit

Earth and Space Science is a lab course which explores forces and processes that operate in the universe. Major areas of study will include astronomy, geology, hydrology, meteorology, and environmental issues. *Physical Science*

SC 35 IB Biology Standard Level

Difficulty: High 2 Sem. — 1 Science Credit
Grade: 11 or 12
Prerequisites: SC49, SC71, or SC72

This pre-university course is designed to allow students to obtain a working knowledge of facts and an increased understanding of biology. Students will be introduced to the manner in which scientists work and communicate with each other by performing laboratory experiments, using the scientific method, and writing laboratory reports. Students will spend approximately 25% of the course performing laboratory experiments and research. This course is part of the IB Diploma Programme. *Life Science* **Note: This is a weighted course.**

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SCIENCE

SC 39 GIS Geospatial Information Systems

Difficulty: High 2 Sem. — 1 Science/Elective Credit
Grade: 11 or 12
Prerequisites: Concurrent or previous enrollment in a higher level science class such as AP Environmental Science or AP Physics; Instructor approval without prerequisites

This course will provide a practical, hands-on approach to spatial database design and spatial data analysis with Geographical Information Systems (GIS) as applied to the natural sciences. Students will use digital tools and created maps to answer scientific questions. Students will participate in a community-based project in the second semester that will be part of their overall grade. **NOTE: This is a weighted course.**

*SC 46 AP Biology

Difficulty: High 2 Sem. — 1 Science/Elective Credit
Prerequisites: SC 49 and SC 71 or SC 81

A very rigorous lab-oriented course which will cover the major topics covered in a freshman college-level course. The class has a high level of difficulty and the student should be prepared to put a considerable amount of time into the course. **This course includes topics of human reproduction and evolution. This course may include dissection.** Students will take an AP exam in May. See your school counselor if you have a financial hardship. *Life Science* **NOTE: This is a weighted course. Course fee required.**

*SC 48 Biotechnology Concepts and Techniques/Biotech I

Difficulty: Average-High 2 Sem. — 1 Science/Elective Credit
Prerequisites: 1 year Biology

This course introduces students to the exciting field of biotechnology. Students will be introduced to topics such as biochemistry, DNA structure, gene expression, protein synthesis, recombinant DNA strategies, as well as forensics and bioethics. Students will perform experiments similar to those presently done in modern research settings such as micropipetting, spectrophotometry, electrophoresis, PCR, and cell culturing. This course will also teach students standard laboratory operations, instrumentation and good laboratory safety practices and procedures. **NOTE: This is a weighted course. Course fee required.**

*SC 49 Biology

Difficulty: Average 2 Sem. — 1 Science Credit
Prerequisite: See page 9 *

This course of study is designed to cover major areas of cell structure, function and processes, genetics, classification, and ecology. This course includes the topics of human reproduction and evolution. **NOTE: This course may include dissection, biotechnology concepts and research techniques.** *Life Science*

*SC 50 Environmental Science

Difficulty: Average 2 Sem. — 1 Science Credit

This course offers a comprehensive overview of environmental issues. The emphasis will be on: population studies, natural resources, pollution, and current environmental topics. *Life/Physical Science*

SC 52 AP Environmental Science

Difficulty: High 2 Sem. — 1 Science Credit
Grades 11-12
Prerequisites: one year of life science and one year of physical science

The goal 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 man-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. Students will take an AP exam in May. See your school counselor if you have a financial hardship. *Life/Physical Science* **NOTE: This is a weighted course.**

VERIFY OFFERINGS AT SCHOOL SITE

SCIENCE

SC 54 Advanced Biotechnology
Difficulty: High **2 Sem. — 1 Science/Elective Credit**
Prerequisites: SC 48
This course is designed as a continuation of Biotechnology Program. Students will be introduced to the scientific concepts and advanced laboratory research techniques currently used in the field of biotechnology. Areas of study include proteomics, plant biotechnology (tissue culturing), synthesizing DNA and PCR, human genetics disease, pharmaceutical biotechnology, DNA sequencing and Genomics. **NOTE: This is a weighted course. Course fee required.**

*SC 55 Human Anatomy and Physiology
Difficulty: Average-High **2 Sem. — 1 Science Credit**
Prerequisites: 1 year Biology
A rigorous lab-oriented course providing students a better understanding of their bodies and exposure to health care career opportunities. **NOTE: This course involves the detailed study of the human reproductive system. This course will include dissection.** *Life Science*

SC 68 Cambridge Biology
Difficulty: Average **2 Sem — 1 Science Credit**
Grade: 9
Prerequisite: Acceptance into Cambridge Program
Cambridge Biology places an emphasis of human biology as well as theoretical and practical scientific skills. Additionally, this course places considerable emphasis on the understanding and use of scientific skills. This course prepares students for the Cambridge Board Examination.

SC 69 Cambridge Chemistry
Difficulty: Average **2 Sem — 1 Science Credit**
Grade: 10
Prerequisite: Cambridge Biology
Students will explore basic principles of chemistry through a mix of theoretical and practical skills. They will develop an understanding of scientific skills and learn how science is studied and practiced. This course will prepare students for the Cambridge Board Examination.

*SC 71 Chemistry
Difficulty: Average **2 Sem. — 1 Science Credit**
Prerequisites: MA 27
This course includes the study of the atom, atomic energy, the formation of molecules, the mathematics of chemistry, and related experimental work. The vocabulary of the chemist is emphasized as are correct laboratory procedures and techniques. *Physical Science*

*SC 72 College Prep Chemistry
Difficulty: High **2 Sem. — 1 Science Credit.**
Prerequisites: MA 27 with "B" or better, MA 30
A course in which the unifying principles of chemistry are developed from experimentation. Emphasis upon understanding of principles rather than memorization of facts and descriptions. Extensive use is made of arithmetic, elementary algebra and geometry. *Physical Science* **NOTE: This is a weighted course.**

SC 75 Ecology of Marine Ecosystems
Difficulty: Average-High **2 Sem. — 1 Science Credit**
Prerequisites: SC 49 Biology and SC 71 Chemistry (or higher)
A one year survey of marine ecosystems and environmental problems with an emphasis on computer-based, hands-on laboratory investigations. The class has a high level of difficulty and the students should be prepared to put forth a considerable amount of time into the course. *Life Science*

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SCIENCE

*SC 77 AP Chemistry
Difficulty: High **2 Sem. — 1 Science Credit**
Prerequisites: 1 yr Chemistry & Algebra
A very rigorous lab-oriented course which covers the major topics presented in a freshman college-level course. A second year course in chemistry intended for those students who are interested in a career in the sciences. Students will take an AP exam in May. See your school counselor if you have a financial hardship. *Physical Science* **NOTE: This is a weighted course.**

*SC 79 AP Physics I
Difficulty: High **2 Sem. — 1 Science/Elective Credit**
Prerequisites: MA40 Algebra II (may be taken concurrently)
A very rigorous, fast-paced course patterned after the first semester General Physics courses at ASU and the Maricopa Community Colleges. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; mechanical waves and sound. It will also introduce electric circuits. Students will take an AP exam in May. See your school counselor if you have a financial hardship. **NOTE: This is a weighted course.**

*SC 80 AP Physics II
Difficulty: High **2 Sem. — 1 Science/Elective Credit**
Prerequisite SC 79 AP Physics 1 & co-enrollment in MA45 Pre-Calculus or above
A very rigorous, fast-paced course patterned after the second semester General Physics courses at ASU and the Maricopa Community Colleges. The course covers fluid mechanics; thermodynamics; electricity and magnetism; optics; atomic and nuclear physics. Students will take an AP exam in May. See your school counselor if you have a financial hardship. **NOTE: This is a weighted course.**

*SC 81 Physics
Difficulty: Average **2 Sem. — 1 Science Credit**
Prerequisites: Algebra, with Geometry recom.
A laboratory course designed to explore the fields of mechanics, heat, light, sound, electricity, magnetism and nuclear energy. Emphasis is placed on the practical application of the principles involved in the above fields. *Physical Science*

*SC 90 AP Physics C
Difficulty: High **2 Sem. — 1 Science Credit**
Prerequisites: 1 yr. Science & 1 yr. Calculus
A very rigorous course patterned after the university physics course offered at ASU. Emphasis will be in the fields of Mechanics and Electromagnetism while looking at both the algebra and calculus description. Students will take an AP exam in May. See your school counselor if you have a financial hardship. *Physical Science* **NOTE: This is a weighted course.**

SC 92 Scientific Research Methods
Difficulty: Average-High **2 Sem. — 1 Science Credit**
A rigorous, research-intensive course which provides students with the opportunity to conduct authentic scientific research on a competitive level. With support from local scientists and other researchers, students will develop a research topic, conduct experiments and present their results at the state regional science fair in the spring. Successful projects earn students opportunities for financial and scholarship awards, travel and networking opportunities within the scientific community. NOTE: It is recommended that this course be taken concurrently with another life or physical science lab course during 10th,11th, or 12th grade. It may also be taken as a senior science capstone course. While this is a rigorous science course, this course does not meet university requirements as a life or physical science content course. **NOTE: This is a weighted course.**

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SCIENCE

*SC 93 & SC 94 IB Biology Higher Level I & II

Difficulty: High **4 Sem. — 2 Science Credit**
Grades: 11-12
Prerequisites: SC 49 & SC 71 or SC 72

This is a comprehensive two-year pre-university course that is designed to allow students to obtain a secure knowledge of a limited body of facts and at the same time, a broad understanding of biology. Students will be introduced to the way scientists work and communicate with each other by performing laboratory experiments, using the scientific method, and writing laboratory reports. Students will spend approximately 60 hours or 25% of the class performing these laboratory experiments. These courses are part of the IB Diploma Programme. *Life Science* **NOTE: These are weighted courses.**

*SC 95 IB Chemistry Standard Level

Difficulty: High **2 Sem. — 1 Science Credit**
Grades: 11-12
Prerequisites: SC 49, SC 72, MA 30, MA 40 (May be taken concurrently)

This course is designed to expand on the knowledge and experimental skills obtained in CP Chemistry and to prepare the student for further study of pure and applied sciences in higher education. It will also help the student to develop the ability to analyze scientific literature critically and to develop manipulative and experimental skills necessary to perform college level scientific investigations. Topics include stoichiometry, atomic theory, periodicity, bonding, states of matter, energetics, kinetics, equilibrium, acids and bases oxidation and reduction, and organic chemistry. A three-hour IB exam is taken at the end of the SL Chemistry course. The IB Internal Assessment for this course includes formal lab reports, informal lab notebook excerpts, and participation in the IB Group 4 Project. Summer assignments may be required. The SL curriculum requires a student to spend 40 hours of laboratory investigation time of which 15 hours is devoted to the interdisciplinary group project. This course is part of the IB Diploma Programme. *Physical Science* **NOTE: This is a weighted course.**

*SC 96 & SC 97 IB Physics Higher Level I & II

Difficulty: High **4 Sem. — 2 Science Credit**
Grades 11-12
Prerequisites: SC 49, SC 71or SC 72, MA 41

IB Physics is designed to introduce students to the laws of physics, the experimental skills required in physics, and the social and historical aspects of physics as an evolving body of human knowledge about nature. Emphasis is placed on experimental design and analysis in order to produce a practical working model of the physical situation. Students will make extensive use of technology to process and communicate information. Mathematical competence in algebra, geometry, and trigonometry is crucial as a prerequisite to IB Physics. Core topics include: measurement; mechanics; thermal physics and properties of matter; waves; electricity and magnetism; and atomic and nuclear physics. Optional topics include: mechanics extension; atomic and nuclear physics extension; energy extension; biomedical physics; historical physics; astrophysics; special and general relativity; or optics. These courses are part of the IB Diploma Programme. *Physical Science* **NOTE: These are weighted courses.**

VERIFY OFFERINGS AT SCHOOL SITE

SCIENCE

HE 70 Principles of the Biomedical Sciences

Difficulty: Average **2 sem. — 1 Science/Elective Credit**

Students investigate the human body systems and various health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They determine the factors that led to the death of a fictional person, and investigate lifestyle choices and medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, medicine, research processes and bioinformatics. This course is designed to provide an overview of all the courses in the Biomedical Sciences program and lay the scientific foundation for subsequent courses. This course is part of the Project Lead the Way Biomedical Sciences program. **NOTE: Course fee required.**

*HE 71 Human Body Systems

Difficulty: Average-High **2 sem. — 1 Science/Practical Arts Credit**
Prerequisite: HE 70

Students examine the interactions of body systems as they explore identity, communication, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal manikin, work through interesting real world cases and often play the role of biomedical professionals to solve medical mysteries. This course is part of the Project Lead the Way Biomedical Sciences program. **NOTE: Course fee is required.**

*HE 72 Medical Interventions

Difficulty: Average-High **2 sem. — 1 Science/Practical Arts Credit**
Prerequisites: HE 71

Students investigate the variety of interventions involved in the prevention, diagnosis and treatment of disease as they follow the lives of a fictitious family. The course is a "How-To" manual for maintaining overall health and homeostasis in the body as students explore: how to prevent and fight infection; how to screen and evaluate the code in human DNA; how to prevent, diagnose and treat cancer; and how to prevail when the organs of the body begin to fail. Through these scenarios, students are exposed to the wide range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics. Lifestyle choices and preventive measures are emphasized throughout the course as well as the important roles scientific thinking and engineering design play in the development of interventions of the future. This course is part of the Project Lead the Way Biomedical Sciences program.

HE 73 Biomedical Innovation

Difficulty: Average-High **2 sem. — 1 Practical Arts/Elective Credit**
Prerequisites: HE 72

In this capstone course, students apply their knowledge and skills to answer questions or solve problems related to the biomedical sciences. Students design innovative solutions for the health challenges of the 21st century as they work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. They have the opportunity to work on an independent project and may work with a mentor or advisor from a university, hospital, physician's office, or industry. Throughout the course, students are expected to present their work to an adult audience that may include representatives from the local business and healthcare community. This course is part of the Project Lead the Way Biomedical Sciences program.

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SCIENCE

*AG 30 Applied Biological Systems
Difficulty: Average
2 Sem. — 1 Biological Science/Practical Arts/Elective Credit
Prerequisites: See page 9 *
Major areas of study: cell function and structure, anatomy, nutrition, biological systems in the environment, plant growth, animal growth, food safety and processing, communication and leadership skills. May include dissection. Leadership development is provided through FFA. Fulfills college entrance and district graduation requirements as a lab science and will count toward the scholastic diploma.

*AG 31 Animal Science
Difficulty: Average **2 Sem. — 1 Science/Practical Arts Credit**
Prerequisites: AG 30
This course is designed to introduce students to the fundamentals of animal anatomy, physiology, genetics, reproduction, growth, nutrition, health, and agribusiness principles. Students will work with small and large animals on the land lab. Leadership development is provided through FFA. **NOTE: Course fee required.**

*AG 35 Veterinary Science
Difficulty: Average-High **2 Sem. — 1 Science/Practical Arts Credit**
Prerequisites: AG 31
This course is designed to develop skills of students with an in-depth focus of anatomy and physiology of various animals. Also encompasses the full scope of the technology of animal health and disease, including the sciences and arts of disease prevention, diagnosis, prognosis, and therapy. Leadership development is provided through FFA. NOTE: This course would be recommended for students who are interested in a career in Veterinary Science. **NOTE: Course fee required.**

SC 99 Independent Study

Frequently Asked Questions About Science

HOW MUCH MATH IS NEEDED FOR PHYSICS? **A strong background in algebra and geometry is recommended.**

WHAT SCIENCE IS NEEDED FOR COLLEGE? **Arizona colleges and universities require three years, to be taken from SC 09 Essential Elements of Sciences, Biology, Biotechnology, Chemistry, Earth Science, Anatomy and Physiology, Environmental Science or Physics. Students should check this in the counseling office or in the college catalog of the university they plan to attend. A student's choice of major does affect entrance requirements.**

IF STUDENTS FAILED ONE SEMESTER OF A YEAR-LONG COURSE, DO THEY HAVE TO TAKE THE WHOLE YEAR OVER? **No, they must repeat only the semester failed, or take a year of another science.**

VERIFY OFFERINGS AT SCHOOL SITE

SOCIAL STUDIES

Note: Courses that will meet the competency requirements for Arizona universities are marked with an asterisk.

SUBJECT AREA GOAL:
The student will develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world.

ESSENTIAL SKILLS:
The student will be able to:
- Use and evaluate primary and secondary sources of information
- Describe the key achievements in the development of the United States and other nations
- Recognize the primary elements of capitalism
- Demonstrate the ability to make decisions for the public good as inf ormed citizens

SS 05 Current Events
Difficulty: Average **1 Sem. — ½ Elective Credit**
Acquaints the student with the influences of current events presently taking place around the world. Includes newspaper, media presentations and debates as classroom resources. Because the content of this course is dependent upon current events, a wide variety of subjects might be covered.

*SS 21 World History/Geography I
Difficulty: Average **1 Sem. — ½ Social Studies Credit**
Traces the development of civilizations from early prehistoric people to the Renaissance and Reformation and includes the teaching of geographic concepts. **NOTE: This course meets 1/2 of the high school graduation requirement for World History.**

*SS 22 World History/Geography II
Difficulty: Average **1 Sem. — ½ Social Studies Credit**
Traces the development of civilizations from the Exploration to the present and includes the teaching of geographic concepts. **NOTE: This course meets 1/2 of the high school graduation requirement for World History.**

*SS 24 Cambridge World History
Difficulty: Average **2 Sem — 1 Social Studies Credit**
Grade: 9
Cambridge World History covers major international issues of the twentieth century with emphasis on historical knowledge and research. There is also an in-depth study on Russia from 1095-1941. This course prepares students for the Cambridge Board Examination.

*SS 26 IB MYP World History/Geography
Difficulty: High **2 Sem. — 1 Social Studies Credit**
Grade: 9
Prerequisites: IB Middle Years Programme Student
A rigorous course that encourages students to respect and understand the world around them, and provides a skills base to facilitate further study. Students gain and develop knowledge and conceptual understanding as well as the skills of research, analysis, interpretation and communication, contributing to the development of the student as a whole. The curriculum traces the development of civilizations from early prehistoric people to the present and includes the teaching of geographic concepts. **NOTE: This course meets the high school graduation requirement for World History. NOTE: This is a weighted course.**