

There are two basic divisions of the science program of Quality Schools International, as follows:

I. **Elementary Science** - normally engaged beginning in the 5-year-old class and completed in the 13-year-old class. In exceptional cases some students may demonstrate mastery of these outcomes before completing the 13-year-old class. This is divided into two areas: biological science, which includes life science and health, and physical science. Studies in earth science are included in both areas. Integrated courses of study are developed which are appropriate for each age level from the 5-year-old through the 11-year-old classes. As part of the science program, gardening is included in the 5-year-old through the 10-year-old classes. The 12- and 13-year-old classes focus equally on physical science and biological science. Environmental issues are emphasized throughout the program.

II. **Secondary Science** - eight courses form this division:

> **Biology** - normally engaged in the first or second year secondary. Mastery of the essential unit outcomes of elementary reading and language arts at the 13-year-old class level, of elementary mathematics at the 13-year-old class level, and of elementary science at the 13-year-old class level must be demonstrated as prerequisites for entry. This course is a graduation requirement for students pursuing the academic diploma. The content is as follows:

- Cytology
- Biochemistry
- Microbiology
- Botany and mycology
- Reproduction and genetics
- Transport and digestion
- Respiration and excretion
- Support and movement
- Control and immunology
- Ecology and phylogeny

> **Physical Science** - normally engaged in the first or second year secondary. Mastery of the essential unit outcomes of elementary reading and language arts at the 13-year-old class level and of science at the 13-year-old class level must be demonstrated as prerequisites for entry. Algebra must be completed prior to or engaged concurrently with physical science. This course is a graduation requirement for students pursuing the academic diploma. The content is as follows:

- Measurement, properties, and atomic theory
- Kinetic theory
- Phases of matter
- Chemical processes
- Organic chemistry
- Motion, force, and machines
- Fluids, solids, and work

- Heat, engines, and waves
- Light and optics
- Electricity and magnetism

> **Chemistry** - normally engaged in the third or fourth year secondary. Mastery of the essential unit outcomes of Physical Science and Algebra must be demonstrated as prerequisites for entry. The content is as follows:

- Properties of matter
- Atomic theory and bonds
- The Periodic Law
- Chemical reactions
- Kinetic theory
- Solutions, acids, and bases
- Reaction kinetics
- Thermodynamics and electrochemistry
- Organic chemistry
- Qualitative analysis

> **Physics** - normally engaged in the third or fourth year secondary. Mastery of the essential unit outcomes of Physical Science and Advanced Mathematics I must be demonstrated as prerequisites for entry. The content is as follows:

- Linear motion
- Forces
- Vectors
- Gravitation
- Momentum
- Work, power, and energy
- Wave motion
- Optics
- Electricity
- Magnetism

> **Discovery Science** - normally engaged in the first year secondary, this course combines life and physical science. Mastery of the essential unit outcomes of 13-year-old science, reading, and language arts must be demonstrated as prerequisites for entry. The content is as follows:

- Plants
- Agronomy
- Oceanography
- Marine Biology
- Mineralogy
- Chemistry
- Conservation
- Ecology
- Light and energy
- Physiology

- > **Environmental Studies** - normally engaged in the third or fourth year secondary. Mastery of the essential unit outcomes of biology or physical science are not prerequisites for entry, but are highly recommended. Students may engage in this course with the consent of the instructor. The course may be offered when requested by a sufficient number of qualified students. The content is as follows:
 - Atmosphere
 - Hydrosphere
 - Lithosphere
 - Energy Transformations
 - Biosphere

- > **Microbiology** - normally engaged in the third or fourth year secondary. Mastery of the essential unit outcomes of biology or physical science are not prerequisites for entry, but are highly recommended. Students may engage in this course with the consent of the instructor. The course may be offered when requested by a sufficient number of qualified students. The content is as follows:
 - Microscopy
 - Pure culture technique
 - Microbial classification
 - Identification of bacteria
 - Microbial control and use

- > **Advanced Biology (AP)** - normally engaged in the third or fourth year secondary. This course is designed for students interested in pursuing in-depth studies in biology and demands a high level of student interest and intellectual pursuit. Engagement requires that a student has demonstrated in previous studies a record of success in biology. Upon mastery of the appropriate unit outcomes, the student will have the opportunity to take the American 'Advanced Placement' examination in biology, which makes it possible to earn university credits. This course may be offered when requested by a sufficient number of qualified students. The content is as follows.
 - Biochemistry
 - Cytology
 - Energy transformation
 - Genetics
 - Phylogeny
 - Taxonomy
 - Botany
 - Zoology
 - Ecology

Each of the above secondary courses consists of ten essential unit outcomes (except for Environmental Studies and Microbiology, which have five each) and each has selective unit outcomes in which students may engage for additional secondary credits. Also special unit outcomes may be designed for some students as independent-study units under the guidance of the appropriate instructor. In

certain cases a student may also engage in any of the essential or selective outcomes as an independent-study unit.

To qualify for the secondary graduation Academic Diploma, each student is normally required to attain mastery of at least thirty unit outcomes in the Science program including the essential outcomes of Physical Science and Biology. Unit outcomes in Discovery Science do not satisfy these requirements for the Academic Diploma. Mastery of at least twenty unit outcomes is required to qualify for the secondary graduation Practical Diploma.