What will my child learn in science?

From bacteria and sea stars to earthquakes and rockets, the University School Middle School’s science curriculum is a comprehensive program that includes life science in 6th grade, earth science and the human body in 7th grade, and physical science at a regular and honors level in 8th grade. A high school level physical science class is also available to qualified 8th graders. In addition, 7th and 8th graders may choose a one-semester science elective course called Science Research and Careers that exposes participants to a wide variety of careers in science and independent science investigations.

At all levels, materials are presented to students through a variety of media and hands-on experiences. Science students have the opportunity to utilize and integrate text, technology, sophisticated lab equipment, and videography throughout the year. In fact, 8th grade students create their own virtual labs whereby they can share their scientific experiences with the rest of the school.

The science department strives to expose students to varied scientific experiences that provide meaningful applications of scientific concepts.

Will my child do labs and science projects?

The science department encourages progressive growth and independence in the students’ science investigative skills as they advance through each middle school grade level. Beginning with directed labs and class projects in 6th grade and moving through group investigations in 7th grade to independent inquiry labs and individual science fair projects in 8th grade, students are taught the process of scientific investigation. This includes not only gathering and using data, but also conducting the analysis and application of information that make the labs and projects relevant to everyday experiences. In fact, the average number of scientific labs in each grade level, for the purpose of exploring, collecting data, and making conclusions, numbers in the high thirties. That is an average of one lab a week!

A Middle School Science Fair is held each year and winners are able to advance to the Broward County Fair competition and to the Florida State Science Fair. Because this investigative process may seem daunting and complex, students get support not only from their instructors, but
also from qualified high school science students through a mentoring partnership program with University School’s Upper School.

**How does the way we teach promote 21st Century skills?**

Educational psychologists Eric Anderman (Ohio State University) and Gale Sinatra (University of Nevada) discussed adolescents’ cognitive abilities related to the following five 21st century skills and how purposefully designed science lessons will foster these skills.

- **Adaptability**: Adolescents have the capacity to think and reason adaptively about science when they first have the content knowledge.

- **Complex Communication Skills**: Science teachers incorporate techniques into their instruction that provide training for students in written communication through lab reports and oral communication as they express their thoughts and findings to fellow students.

- **Non-routine Problem Solving**: By designing problems that are connected to student interest and promote students’ “thinking outside the box”, they learn to take what seems like disconnected information, put it into a structure, and persist towards a solution. This requires a strong base of knowledge and the “skill and the will” according to Paris, Lipson, and Wixson, (1983).

- **Self-Management**: Adolescents learn to control, regulate, and monitor their use of various learning strategies (Zimmerman, 2000) in the scientific research process. Teachers promote this by coaching students through the learning task. A student’s confidence that they have the capacity to complete a learning task leads to more effective “self-management (Schunk and Zimmerman, 2008).

- **Systems Thinking**: This is a complex skill that is difficult for younger students to learn. Their ability to think this way can be promoted through labs that are designed to provide multiple experiments and results, allowing them to make predictions and see emerging patterns.

In summary, the Middle School’s science program strives to promote a learning environment that addresses real-world phenomena. Through active engagement that provides opportunities for students to use inquiry and problem-based learning, we are teaching them skills that are important in the communities in which they live.

Other Resources:
