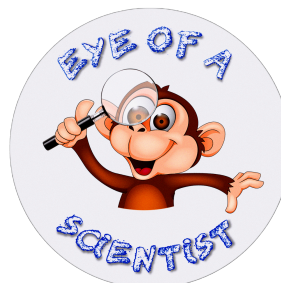


Eye of a Scientist

*Research methods program for Lower
Elementary (LE)*



Fall 2024 Syllabus and Program Benefits

Program Overview:

Eye of a Scientist's Fall 2024 program for students in LE is designed to engage students aged 5-7 years of age in science research lessons. Students learn the fundamentals of how the scientific method is applied across the following science fields: engineering, chemistry, and astronomy.

Each lesson will guide students through the scientific method, starting with the observation and hypothesis that sparked the topic in question. Students will have the opportunity to create and test their own hypotheses as they perform activities that will help to develop their fine motor skills in a laboratory setting. Students will model in 2D and 3D, measure various substances and their units of measurements, compare, categorize, collect nominal data, and conclude their experiment's results. Most importantly, students will be exposed to age-dependent laboratory research tools that include, but not limited to, microscopes, magnifying glasses, pipettes, beakers, graduated cylinders, personal protective equipment (PPE), and more. Every lesson is summarized with the class' application of the skill and topic to expand on how the lesson applies in their everyday life.

The following syllabus provides an outline of the Fall 2024 topic lesson schedule. The pre-planned schedule provides a plan that can be subjected to change depending on each group's learning style and educational level. Eye of a Scientist adjusts the lesson content and skills developed to meet a student's abilities. Our main goal is to provide a laboratory setting where students can explore abstract science topics and bring them to life with hands-on projects. Parents will receive a summary sheet of all of the topics and skills covered in each class. Some lessons will

include extensions for parents to reinforce at home. Both summaries and extensions will help students and parents to continue to explore topics and skills learned in class throughout the Fall 2024 semester.

Semester Goals:

- Learn and understand the fundamentals of the scientific method, basic scientific skills and investigative tools used in the lab.
- Learn and understand the fundamentals of the properties of matters.
- Introduction to astronomical tools and the study of our solar system.
- Explore the application of scientific inquiry to understand how abstract science topics apply in our everyday lives.
- Develop patience, teamwork and peer support in a laboratory setting.
- Learn redesigning original ideas from observed data that promotes problem-solving and critical thinking skills.
- Encourage students to trust and apply their inquiry-based and problem-solving skills in their daily lives.

Fall 2024 Schedule:

A. Weeks 1-2: How to be a scientist

- a. Week 1. Sept. 3-5, 2024.** The Scientific Method: Learning the steps of a scientific investigation and following the steps through the observation of how the temperature of water can affect its density.
- b. Week 2. Sept. 17-19, 2024.** Using Scientific Tools: Learning the various kinds of science tools used in the lab and performing an exercise that will promote the use of each tool to complete it.

B. Weeks 3-6: All about matter

- a. Week 3. Oct., 1-3, 2024.** Atomic Structure of Matter: creating a 2D and 3D atom model to learn about subatomic particles that make up atoms, the building blocks of all matter.
- b. Week 4. Oct., 15-17, 2024.** Physical Changes of Matter: Exploration of the law of conservation through the measurement of an object's mass before and after a physical change of appearance.
- c. Week 5. Oct., 29-31, 2024.** Sink or Float: Designing boats using different kinds of materials and testing out their ability to float on water after weight is added.

- d. **Week 6. Nov., 5-7, 2024.** Chemical Changes of Matter: Investigating how combining various ingredients can create a colorful and explosive chemical reaction.

C. Week 7-8: My Space

- a. **Week 7. Nov., 19-21, 2024.** Galaxy of my Dreams: Learning about galaxies through a modeling exercise to create a representation of a galaxy.
- b. **Week 8. Dec., 3-5, 2024.** Comets: Active discussion on comets and exploring simulations of a comet's trajectory around the sun.

Assessment during semester:

- **Openness and participation in using newly presented scientific tools.**
- **Participation of personal ideas and interpretation of the presented science topic.**
- **Teamwork and peer support across paired/group activities.**
- **Ideas of redesigning solutions to a problem presented**
- **Understanding experimental results from mainly nominal data to express the meaning of their results and topic covered within their age dependent vocabulary abilities.**