
PROGRAM 3 - Modeling Atoms

Subject Area: 7th Grade Physical Science & 10th Grade Chemistry

Lesson Objective: Modeling Atoms allows students to visualize the makeup of an atom in three-dimensional space by creating models of the subatomic particles that make up an atom. Students will learn concepts about atoms, molecules, and isotopes through drawing and constructing models of atoms.

Grouping: Whole group **Duration:** 60 minutes **Class Size:** Max 30

Location: Ruth Patrick Science Center

Materials: PowerPoint (Provided); Become an Atom Activity Labels, Scotch Tape, Painters Tape, Atom Illustration Worksheet (PDF), Pencil, Candy (Skittles, M&Ms, Original Fruit Smiles)

Program Details: Modeling Atoms is a lesson plan provided by the Education Program at Savannah River Site in collaboration with The Ruth Patrick Science Education Center's Student Programs. Learn more about Ruth Patrick Science Education Center's Student Programs: <https://www.usca.edu/rpsec/departments/student-programs>

This Program meets:

South Carolina Academic Standards and Performance Indicators for Science, 2014

Physical Science, Standard 7.2A.1: Develop and use simple atomic models to illustrate the components of elements (including the relative position and charge of protons, neutrons, and electrons)

Chemistry, Standard H.C.2: Conceptual Understanding: The existence of atoms can be used to explain the structure and behavior of matter. Each atom consists of a charged nucleus, consisting of protons and neutrons, surrounded by electrons. The interactions of these electrons between and within atoms are the primary factors that determine the chemical properties of matter. In a neutral atom, the number of protons is the same as the number of electrons.

Chemistry, Standard H.C.2A.1: Obtain and communicate information to describe and compare subatomic particles with regard to mass, location, charge, electrical attractions and repulsions, and impact on the properties of an atom.

Chemistry, Standard H.C.2A.2: Use the Bohr and quantum models of atomic structure to exemplify how electrons have discrete energy levels.

South Carolina College- and Career- Ready Science Standards 2021

Physical Science: Matter and its Interactions, Standard 7-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures