

Idaho Extended Content Standards Draft
Extended Content Indicators
Grade 8-9
Physical Science

Standard 1: Nature of Science - Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	GR	Goals	Objectives	Essence	Extended Content Indicators
Interrelated Nature of Science	8-9.S.1.1	Understand Systems, Order, and Organization	8-9.PS.1.1.1 Explain the scientific meaning of system, order, and organization. (648.01a)		8-9.PS.1.1.1.A Demonstrate understanding of a system.
			8-9.PS.1.1.2 Apply the concepts of order and organization to a given system. (648.01a)		8-9.PS.1.1.2.A Use a model to display order & organization to a given system.

Standard 1: Nature of Science: Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
Interrelated nature of science	8-9.S.1.2	Understand Concepts and Processes of Evidence, Models, and Explanation	8-9.PS.1.2.1 Use observations and data as evidence on which to base scientific explanations. (648.02a)		8-9.PS.1.2.1.A Compare and contrast relative data.
			8-9.PS.1.2.2 Develop models to explain concepts or systems. (648.02b)		8-9.PS.1.2.2.A Use models to explain concepts or systems.
			8-9.PS.1.2.3 Develop scientific explanations based on knowledge, logic, and analysis. (648.02c)		8-9.PS.1.2.3.A Develop a scientific explanation based on known data.

Standard 1: Nature of Science - Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
Interrelated Nature of Science	8-9.S.1.3	Understand Constancy, Change, and Measurement	8-9.PS.1.3.1 Measure changes that can occur in and among systems. (648.03b)		8-9.PS.1.3.1.A Measure changes that can occur in and among systems.
			8-9.PS.1.3.2 Analyze changes that can occur in and among systems. (648.03b)		8-9.PS.1.3.2.A Respond to changes that can occur in and among systems.
			8-9.PS.1.3.3 Measure and calculate using the metric system. (648.03c)		8-9.PS.1.3.3.A Measure using the metric system or U.S. Customary System of Measurement.

Standard 1: Nature of Science: Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
	8-9.S.1.4	Understand the Theory that Evolution is a Process that Relates to the Gradual Changes in the Universe and of Equilibrium as a Physical State	No objectives at this grade level.		No objectives in Physical Science.

Standard 1: Nature of Science - Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
Interrelated Nature of Science	8-9.S.1.5	Understand Concepts of Form and Function	No objectives in Physical Science.		No objectives in Physical Science.

Standard 1: Nature of Science - Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8-9.S.1.6	Understand Scientific Inquiry and Develop Critical Thinking Skills	8-9.PS.1.6.1 Identify questions and concepts that guide scientific investigations. (649.01a)		8-9.PS.1.6.1.A. Identify questions that can guide scientific investigations.
			8-9.PS.1.6.2 Utilize the components of scientific problem solving to design, conduct, and communicate results of investigations. (649.01b)		8-9.PS.1.6.2.A Communicate results of investigations.
			8-9.PS.1.6.3 Use appropriate technology and mathematics to make investigations. (649.01c)		8-9.PS.1.6.3.A Select and use appropriate technology to make investigations.
			8-9.PS.1.6.4 Formulate scientific explanations and models using logic and evidence. (649.01d)		8-9.PS.1.6.4.A Construct explanations and/or models using evidence.
			8-9.PS.1.6.5 Analyze alternative explanations and models. (649.01e)		8-9.PS.1.6.5.A Select alternative explanations and models.
			8-9.PS.1.6.6 Communicate and defend a scientific argument. (649.01f)		8-9.PS.1.6.6.A Communicate scientific procedures and explanations.
			8-9.PS.1.6.7 Explain the differences among observations, hypotheses, and theories. (649.01g)		8-9.PS.1.6.7.A Compare the differences among observations.

Standard 1: Nature of Science - Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	Gr	Goal	Objectives	Essence	Extended Content Indicators
Interrelated Nature of Science	8-9.S.1.7	Understand That Interpersonal Relationships Are Important in Scientific Endeavors	No objectives in Physical Science.		No objectives in Physical Science.

Standard 1: Nature of Science - Students exercise the basic tenets of scientific investigation, make accurate observations, exercise critical thinking skills, apply proper scientific instruments of investigation and measurement tools, and communicate results in problem solving. Students evaluate the validity of information by utilizing the tools of scientific thinking and investigation. Students summarize their findings by creating lab reports using technical writing including graphs, charts, and diagrams to communicate the results of investigations.

Extended Standard 1: Students follow the basic tenets of scientific investigation by making accurate observations, applying proper scientific instruments and measurement tools, and communicating results. Students record accurate information by utilizing the tools of a simple investigation. Students participate in creating lab reports using graphs, charts, or diagrams to communicate results.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
	8-9.S.1.8	Understand Technical Communication	8-9.PS.1.8.1 Analyze technical writing, graphs, charts, and diagrams. (658.02a)		8-9.PS.1.8.1.A Use graphs, charts, and diagrams.

Standard 2: Physical Science - Students explain the structure and properties of atoms, including isotopes. Students explain how chemical reactions, while requiring or releasing energy, can neither destroy nor create energy or matter. Students explain the differences between fission and fusion. Students explain the interactions of force and mass in describing motion using Newton’s Laws. Students explain how energy can be transformed from one form to another while the total amount of energy remains constant. Students classify energy as potential and/or kinetic, and as energy contained in a field.

Extended Standard 2: Students observe models showing the structure and properties of atoms. Students Identify when chemical reactions occur, while requiring or releasing energy. Students demonstrate a simplified process of fission and fusion. Students explore interactions of force and mass in describing motion. Students identify when energy is transformed from one form to another. Students classify energy as potential and/or kinetic.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Physical Science	8-9.S.2.1	Understand the Structure and Function of Matter and Molecules and Their Interactions	No objectives in Physical Science.		No objectives in Physical Science.

Standard 2: Physical Science - Students explain the structure and properties of atoms, including isotopes. Students explain how chemical reactions, while requiring or releasing energy, can neither destroy nor create energy or matter. Students explain the differences between fission and fusion. Students explain the interactions of force and mass in describing motion using Newton’s Laws. Students explain how energy can be transformed from one form to another while the total amount of energy remains constant. Students classify energy as potential and/or kinetic, and as energy contained in a field.

Extended Standard 2: Students observe models showing the structure and properties of atoms. Students Identify when chemical reactions occur, while requiring or releasing energy. Students demonstrate a simplified process of fission and fusion. Students explore interactions of force and mass in describing motion. Students identify when energy is transformed from one form to another. Students classify energy as potential and/or kinetic.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Physical Science	8-9.S.2.2	Understand Concepts of Motion and Forces	8-9.PS.2.2.1 Explain motion using Newton’s Laws of Motion. (650.04b)		8-9.PS.2.2.1.A Observe motion using Newton’s Laws of Motion.

Standard 2: Physical Science –Students explain the structure and properties of atoms, including isotopes. Students explain how chemical reactions, while requiring or releasing energy, can neither destroy nor create energy or matter. Students explain the differences between fission and fusion. Students explain the interactions of force and mass in describing motion using Newton’s Laws. Students explain how energy can be transformed from one form to another while the total amount of energy remains constant. Students classify energy as potential and/or kinetic, and as energy contained in a field.

Extended Standard 2: Students observe models showing the structure and properties of atoms. Students Identify when chemical reactions occur, while requiring or releasing energy. Students demonstrate a simplified process of fission and fusion. Students explore interactions of force and mass in describing motion. Students identify when energy is transformed from one form to another. Students classify energy as potential and/or kinetic.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Physical Science	8-9.S.2.3	Understand the Total Energy in the Universe is Constant	8-9.PS.2.3.1 Explain that energy can be transformed but cannot be created nor destroyed. (650.05a)		8-9.PS.2.3.1.A Show and communicate that energy can be transformed but cannot be created nor destroyed.
			8-9.PS.2.3.2 Classify energy as potential and/or kinetic and as energy contained in a field. (650.05b)		8-9.PS.2.3.2.A Sort energy as potential and/or kinetic.

Standard 2: Physical Science – Students explain the structure and properties of atoms, including isotopes. Students explain how chemical reactions, while requiring or releasing energy, can neither destroy nor create energy or matter. Students explain the differences between fission and fusion. Students explain the interactions of force and mass in describing motion using Newton’s Laws. Students explain how energy can be transformed from one form to another while the total amount of energy remains constant. Students classify energy as potential and/or kinetic, and as energy contained in a field.

Extended Standard 2: Students observe models showing the structure and properties of atoms. Students Identify when chemical reactions occur, while requiring or releasing energy. Students demonstrate a simplified process of fission and fusion. Students explore interactions of force and mass in describing motion. Students identify when energy is transformed from one form to another. Students classify energy as potential and/or kinetic.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Physical Science	8-9.S.2.4	Understand the Structure of Atoms	8-9.PS.2.4.1 Describe the properties, function, and location of protons, neutrons, and electrons. (650.01a)		8-9.PS.2.4.1.A Identify the location of protons, neutrons, and electrons.
			8-9.PS.2.4.2 Explain the processes of fission and fusion. (650.01b)		8-9.PS.2.4.2.A Demonstrate a simple process of fission and fusion.
			8-9.PS.2.4.3 Describe the characteristics of isotopes. (650.01c)		8-9.PS.2.4.3.A Identify a characteristic of an isotope
			8-9.PS.2.4.4 State the basic electrical properties of matter. (650.01d)		8-9.PS.2.4.4.A Identify matter that has basic electrical properties.
			8-9.PS.2.4.5 Describe the relationships between magnetism and electricity.		8-9.PS.2.4.5.A Identify matter that have magnetic properties

Standard 2: Physical Science – Students explain the structure and properties of atoms, including isotopes. Students explain how chemical reactions, while requiring or releasing energy, can neither destroy nor create energy or matter. Students explain the differences between fission and fusion. Students explain the interactions of force and mass in describing motion using Newton’s Laws. Students explain how energy can be transformed from one form to another while the total amount of energy remains constant. Students classify energy as potential and/or kinetic, and as energy contained in a field.

Extended Standard 2: Students observe models showing the structure and properties of atoms. Students Identify when chemical reactions occur, while requiring or releasing energy. Students demonstrate a simplified process of fission and fusion. Students explore interactions of force and mass in describing motion. Students identify when energy is transformed from one form to another. Students classify energy as potential and/or kinetic.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Physical Science	8-9.S.2.5	Understand Chemical Reactions	8-9.PS.2.5.1 Explain how chemical reactions may release or consume energy while the quantity of matter remains constant. (650.03a)		8-9.PS.2.5.1.A Observe and identify how chemical react.

Standard 3: Biology – No goals or objectives in Earth Science.

Standard 4: Earth and Space Systems – No goals or objectives in Earth Science.

Standard 5: Personal and Social Perspectives; Technology – Students understand that science and technology interact and impact both society and the environment. Students describe issues such as water and air quality, hazardous waste, renewable and nonrenewable resources.

Extended Standard 5: Students explore how science and technology interact and impact both society and the environment. Students identify environmental issues such as water and air quality, hazardous waste, renewable and nonrenewable resources.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Environmental Science	8-9.S.5.1	Understand Common Environmental Quality Issues, Both Natural and Human Induced	No objectives in Physical Science.		No objectives in Physical Science.

Standard 5: Personal and Social Perspectives; Technology - Students understand that science and technology interact and impact both society and the environment. Students describe issues such as water and air quality, hazardous waste, renewable and nonrenewable resources.

Extended Standard 5: Students explore how science and technology interact and impact both society and the environment. Students identify environmental issues such as water and air quality, hazardous waste, renewable and nonrenewable resources.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Technology	8-9.S.5.2	Understand the Relationship between Science and Technology	8-9.PS.5.2.1 Explain how science advances technology. (655.01a)		8-9.PS.5.2.1.A Show how science and technology are interrelated.
			8-9.PS.5.2.2 Explain how technology advances science. (655.01a)		8-9.PS.5.2.2.A Show how technology advanced science.
			8-9.PS.5.2.3 Explain how science and technology are pursued for different purposes. (656.01b)		8-9.PS.5.2.3.A Identify different purposes for science research and technology.

Standard 5: Personal and Social Perspectives; Technology - Students understand that science and technology interact and impact both society and the environment. Students describe issues such as water and air quality, hazardous waste, renewable and nonrenewable resources.

Extended Standard 5: Students explore how science and technology interact and impact both society and the environment. Students identify environmental issues such as water and air quality, hazardous waste, renewable and nonrenewable resources.

Topic	Gr	Goal	Objective	Essence	Extended Content Indicators
Natural Resources	8-9.S.5.3	Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	No objectives in Physical Science.		No objectives in Physical Science.