**Stop and Go**Lesson focuses on how engineers have developed and improved traffic management over time by engineering and re-engineering the traffic light. Students work in teams to design a new traffic light system to meet the needs of a potential client. They must devise a system or technical enhancement to accommodate a busy bicycle lane and roadway that intersects a hospital emergency room entrance. As a team they devise their planned improvements, draw a design of the improved traffic signal, develop a written and verbal presentation to the client, present their designs to the class, provide feedback on other team's designs, and share observations about re-engineering.

| Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 | Chemistry | Physics |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Strand: Scientific Investigation and Reasoning*** |
|  |  |  |  |  |  |  |  |
| 2.D Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations. | 2.D Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured. | 2.D Analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence. | 2.E Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends. | 2.E Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends. | 2.E Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends. |  |  |
| 2.F Communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion. | 2.F Communicate valid, oral and written results supported by data. | 2.F Communicate valid conclusions in both written and verbal forms. |  |  |  | 3.BCommunicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles and marketing materials. | 3.B Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles and marketing materials. |
|  |  | 3.C Draw or develop a model that represents how something works or looks that cannot be seen such as how a soda dispensing machine works. | 3.B Use models to represent aspects of the natural world such as a model of Earth’s layers. | 3.B Use models to represent aspects of the natural world such as human body systems, and plant and animal cells. | 3.B Use models to represent aspects of the natural world such as an atom, a molecule, space or a geologic feature. |  |  |
| 3.D Connect grade level appropriate science concepts with the history of science, science careers and contributions of scientists. | 3.D Connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists. | 3.D Connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists. | 3.D Relate the impact of research on scientific thought and society including the history of science and contributions of scientists as related to the content. | 3.D Relate the impact of research on scientific thought and society, including history of science and contributions of scientists as related to the content. | 3.D Relate the impact of research on scientific thought and society including the history of science and contributions of scientists as related to the content. | 3.DEvaluate the impact of research on scientific thought, society, and the environment. | 3.D Explain the impacts of the scientific contributions of a variety of historical and contemporary scientists on scientific thought and society. |
|  |  |  |  |  |  | 3.EDescribe the connection between chemistry and future careers. | 3.E Research and describe the connections between physics and future careers. |
| *Strand: Force, Motion and Energy* |
| 6.A Explore different forms of energy including mechanical, light, sound, and heat/thermal in everyday life. | 6.A Differentiate among forms of energy including mechanical, sound, electrical, light, and heat/thermal. | 6.A Explore the uses of energy including mechanical, light, thermal, electrical, and sound energy. |  |  |  |  |  |