Course: IPC		
Curricular Unit: **Energy and Waves**	**Strand:** **Thermal Energy**	**Duration:** 2 weeks
Content (TEKS): Northside Independent School District incorporates big ideas, enduring understandings and skills of a discipline. The curriculum units provide clarity and are aligned to the Texas Essential Knowledge and Skills.		
Universal Concepts: Cause and Effect; Energy and Matter; Stability and Change		
Content Specific Concepts: Thermal Energy and its transfer- convection, conduction, radiation.		
English Language Proficiency Standards (ELPS): Classroom instruction must effectively integrate second language acquisition with quality content area instruction to ensure that ELLs acquire social and academic language proficiency, in English, learn the knowledge and skills in the TEKs, and reach their full academic potential.		
Understanding/Generalization: • Thermal energy is measure of kinetic energy in obects and environments.		
Essential Questions: The student will be able to answer these questions… • Why are metal pans used to heat food? • Is there such a thing as "cold"? Explain. • Which has more energy, ice sculpture or a lit match? • How do insulated cups work to keep your drink hot or cold? • Why do people spend more money on YETI cups? Are they really better than other cups? • When at home can you experience thermal energy moving by convection? Conduction? Radiation?		
Do: The student will be able to…		**Know:** The student will know…
5 The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to: (A) recognize and demonstrate that objects and substances in motion have kinetic energy such as vibration of atoms.	**5(A)**	**• temperature is the measure of average kinetic energy.** • thermal energy is related to the motion in the particles of an object.
5 The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to: (E) investigate and demonstrate the movement of thermal energy through solids, liquids and gases by convection, conduction, and radiation such as in weather, living and mechanical systems.	**5(E)**	**• thermal (heat) energy moves from hot to cold.** **• conduction is thermal (heat) energy transferred touch.** **• convection is thermal (heat) energy transferred through currents.** **• radiation is thermal (heat) energy transferred by electromagnetic waves**.
Process Standards		

(1)Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:
(A) demonstrate safe practices during laboratory and field investigations , including the appropriate use of safety showers, eyewash fountains, safety goggles or chemical splash goggles, as appropriate, and fire extinguishers
(B) know specific hazards of chemical substances such as flammability, corrosiveness, and radioactivity as summarized on the Safety Data Sheets (SDS); and
(C) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.

(2) Scientific processes. The student uses scientific practices [methods] during laboratory and field investigations. The student is expected to:
(A) know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section;
(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology;
(C) collect data and make measurements with accuracy and precision;
(D) organize, analyze, evaluate, make inferences, and predict trends from data; and
(E) communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphs, journals, summaries, oral reports, and technology-based reports.

(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:
(A)analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the students
(B) communicate and apply scientific information extracted from various sources such as current events, published journal articles, and marketing materials;
(C) draw inferences based on data related to promotional materials for products and services;
(D) evaluate the impact of scientific research on society and the environment;
(E) evaluate models according to their limitations in representing biological objects or events; and
(F) research and describe the history of biology and contributions of scientists.