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| **6th Grade Science Curriculum Document Quarter 1** | | | | | |
| ***6.PS3: Energy*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.PS3.1:**  Analyze the properties and compare the sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy. | | | | | |
| 1-Weeks of Quarter  Percent of TNReady | | **Main Objectives:**  I can analyze the properties of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy.  I can compare the sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy  **Learning Outcomes:**  I can distinguish among the different types of energy.  I can classify an object’s energy as either kinetic, potential, or both.  I can compare and contrast the types of kinetic and potential energy.  **Activities**:  Sorting cards  Venn diagram  WebQuest | Forms of Energy Sort:  <http://www.cpalms.org/Uploads/resources/46550/2/13/docs/Six%20Forms%20of%20Energy-Explore%20Picture%20Sort.pdf>  Kinds of Energy:  <http://www.eschooltoday.com/energy/kinds-of-energy/all-about-energy.html>  WebQuest Options:  <http://brettlagrange.cmswiki.wikispaces.net/file/view/FormsofEnergyWebQuest-15zjl04.pdf/583602597/FormsofEnergyWebQuest-15zjl04.pdf>  <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&ved=0ahUKEwiShbi26svbAhVOhq0KHQeLARIQFghkMAU&url=http%3A%2F%2Fwww.rlas-116.org%2Fuserfiles%2F12362%2FClasses%2F22099%2FPotential%2520and%2520Kinetic%2520WebQuest.doc&usg=AOvVaw3Eb_kNgf5-d4e7nh4t_uCr> | | **CROSSCUTTING CONCEPT:  Energy and Matter** *Students give general descriptions of different forms and mechanisms for energy storage within a system*  **SCIENCE AND ENGINEERING PRINCIPLE: Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.* |
| ***6.PS3: Energy*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.PS3.2: Construct a scientific explanation of the transformation between potential and kinetic energy.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Main Objective:**  I can construct a scientific explanation of the transformation between potential and kinetic energy.  **Learning Outcomes:**  I can define the law of conservation of energy.  I can explain how energy changes form.  **Activities:**  Task cards  Stations  Lab | Energy and Energy Transformation Task Cards:  <https://www.filepicker.io/api/file/6eOPy842RQeD18meBXoi>  Stations:  <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=10&ved=0ahUKEwiL-ej87cvbAhUPTKwKHXp_ACkQFghdMAk&url=http%3A%2F%2Fscience4inquiry.com%2FLessonPlans%2FPhysicalScience%2FEnergy%2FEnergyLessonFinalWorksheet.doc&usg=AOvVaw2uprblnfMZYlFKaiptOBQt>  Ball Drop Lab:  <http://fsc.fernbank.edu/Newsletter/PDF/Ball_Drop_activity.pdf>  Skate Park Energy Transformations:  <https://phet.colorado.edu/sims/html/energy-skate-park-basics/latest/energy-skate-park-basics_en.html> | | **CROSSCUTTING CONCEPT:**  **Energy and Matter** *Students track energy changes through transformations in a system.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Constructing explanations and designing solutions**  *Students form explanations using source (including student developed investigations) which show comprehension of parsimony, utilize quantitative and qualitative models to make predictions, and can support or cause revisions of a particular conclusion.* |
| ***6.PS3: Energy*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.PS3.3: Analyze and interpret data to show the relationship between kinetic energy and the mass of an object and its speed.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | | **Main Objective:**  I can analyze and interpret data to show the relationship between kinetic energy and the mass of an object and its speed.  **Learning Outcomes:**  I can identify the mass and speed of an object.  I can calculate an object’s kinetic energy given its mass and speed.  I can analyze data to show the relationship between kinetic energy and mass and speed.  **Activities:**  Lab  Graphing | Lab:  <https://www.alpineschool.org/cms/lib/NJ01000997/Centricity/Domain/45/lab%20kinetic%20energy.pdf>  Scholastic NASCAR Lesson:  <https://www.scholastic.com/teachers/sponsored-content/nascarspeed/17-18/kinetic-energy-energy-in-motion-0/> | | **CROSSCUTTING CONCEPT:  Scale, Proportion, and Quantity** *Students create proportional and algebraic relationships from graphical representations*  **SCIENCE AND ENGINEERING PRINCIPLE:  Analyzing and interpreting data.** *Students should create and analyze graphical presentations of data to identify linear and non-linear relationships, consider statistical features within data and evaluate multiple data sets for a single phenomenon.* |
| ***6.PS3: Energy*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.PS3.4: Conduct an investigation to demonstrate the way that heat (thermal energy) moves among objects through radiation, conduction, or convection.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | | **Main Objective:**  I can conduct an investigation to demonstrate the way that thermal energy moves among objects through radiation, conduction, or convection.  **Learning Outcomes:**  I can explain how thermal energy moves.  I can distinguish among radiation, conduction, and convection.  **Activity:**  Sort  Task Cards | Study Jams: Heat  <http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/heat.htm>  Article:  <http://alkisites.vansd.org/dgray/Assignments/conduction_convection_radiation_reading.pdf>  Image Sort:  <http://www.troup.org/userfiles/929/My%20Files/Science/MS%20Science/8th%20Science/Energy/energy_transfer/heat_transfer_image_sort.pdf?id=8326>  Task Cards:  <https://www.cabarrus.k12.nc.us/cms/lib/NC01910456/Centricity/Domain/10075/HeatTransferTaskCardsDifferentiated.pdf> | | **CROSSCUTTING CONCEPT:**  **Cause and Effect**  *Students begin to connect their explanations for cause and effect relationships to specific scientific theory.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Planning and carrying out controlled investigations**  *Students begin to investigate independently, select appropriate independent variables to explore a dependent variable and recognize the value of failure and revision in the experimental process.* |
| ***6.ETS1: Engineering Design*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ETS1.2:**  **Design and test different solutions that impact energy transfer.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Main Objective:**  I can design and test different solutions that impact energy transfer.  **Learning Outcomes:**  I can research how energy transfer is impacted.  I can design a solution that impacts energy transfer.  I can test different solutions that impact energy transfer.  **Activities:**  Rube Goldberg (Drawing, animation, or lab) | Rube Goldberg Game:  <http://pbskids.org/zoom/games/goldburgertogo/rubegame.html>  Dynamic Systems:  <http://www.engineering.com/GamesPuzzles/DynamicSystems.aspx>  Lab Activity:  <http://iridescentlearning.org/wp-content/uploads/2011/10/making-machines_Rube.pdf> | | **CROSSCUTTING CONCEPT:**  **Energy and Matter**  *Students track energy changes through transformations in a system.*  **SCIENCE AND ENGINEERING PRINCIPLE: Planning and carrying out controlled investigations**  *Students can design tests which determine the effectiveness of a device under varying conditions.* |
| 7th Grade Science Curriculum Document Quarter 2 | | | | | |
| ***6.LS2: Ecosystems: Interactions, Energy, and Dynamics*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS2.1-**  **Evaluate and communicate the impact of environmental variables on population size.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Main Objective:**  I can evaluate and communicate the impact of environmental variables on population size.  **Learning Outcomes:**  I can define carrying capacity and limiting factors.  I can explain how environmental variables affect population size.  **Activities**:  Article and Questions  Interactive Games  Kaibab Lab | Food Fight Game:  <https://www.brainpop.com/games/foodfight/>  Article:  <https://www.ck12.org/book/CK-12-Life-Science-Concepts-For-Middle-School/section/12.5/>  Limiting Factors:  <http://www.nhptv.org/natureworks/nwep12a.htm>  Interactive: Carrying Capacity  <http://www.classzone.com/books/ml_science_share/vis_sim/em05_pg43_carrying/em05_pg43_carrying.html>  Kaibab Lab:  <https://mrsancheta.weebly.com/uploads/1/6/1/6/16166098/_lesson_of_the_kaibab.pdf> | | **CROSSCUTTING CONCEPT:**  **Stability and Change**  *Students explain that systems in motion or dynamic equilibrium can be stable.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Analyzing and interpreting data.** *Students should create and analyze graphical presentations of data to identify linear and non-linear relationships, consider statistical features within data and evaluate multiple data sets for a single phenomenon.* |
| ***6.LS2: Ecosystems: Interactions, Energy, and Dynamics*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard 6.LS2.2:**  **Determine the impact of competitive, symbiotic, and predatory interactions in an ecosystem.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Main Objective:**  I can determine the impact of competitive, symbiotic, and predatory interactions in an ecosystem.  **Learning Outcomes:**  I can explain how organisms compete for resources.  I can identify and explain the three types of symbiosis.  I can describe predatory interactions in an ecosystem.  **Activities:**  [Symbiosis Want Ad](https://1.cdn.edl.io/lfo4GkWXQLagMmuMZQuKjxAZ95OQvMQeOUnHZXOFoRWDcNRk.pdf)  [Stations: Lesson Plan Example](https://www.keslerscience.com/symbiosis-lesson-plan-a-complete-science-lesson-using-the-5e-method-of-instruction/) | Exploring Symbiosis:  <https://oimb.uoregon.edu/Documents/GK12/GK12-Fourth-Symbiosis.pdf>  Exploring Relationships in an Ecosystem:  <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=16&ved=0ahUKEwjwn9rJ_cvbAhWsna0KHbEvCY0QFghrMA8&url=http%3A%2F%2Fwww.cpalms.org%2FExportTemplates%2FExport.aspx%3Furl%3D%2FPublic%2FPreviewResource%2FPrintResource%2F%3Fid%3D154779%26IsAuthenticated%3DFalse%26display%3Dblock%26Private%3Dtrue%26ProtectedUser%3Dtrue%26type%3DResource%26providerUserKey%3D00000000-0000-0000-0000-000000000000&usg=AOvVaw0ROJdezCs-CUMCFK2gED5_>  WebQuest/Brochure:  <http://stu.westga.edu/~rtaulbe1/curriculum_web/webquest.html> | | **CROSSCUTTING CONCEPT:**  **Cause and Effect**  *Students infer and identify cause and effect relationships from patterns.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Engaging in argument from evidence** *Students critique and consider the degree to which competing arguments are supported by evidence.* |
| ***6.LS2: Ecosystems: Interactions, Energy, and Dynamics*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS2.3-**  **Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | | **Main Objective:**  I can draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.  **Learning Outcomes:**  I can distinguish among producers, consumers, scavengers, and decomposers.  I can identify the key components of a food web and energy pyramid.  I can explain how energy is transferred in a food web or energy pyramid.  I can explain the 10% energy rule.    **Activities:**  Stations  Symbaloo  WebQuest | 10% rule lab:  <http://www.gwisd.esc2.net/vimages/shared/vnews/stories/4e6fb7eb772cd/10%25%20Rule%20Activity%20Instructions.pdf>  Ecosystems Symbaloo and Digital Handout:  <https://www.symbaloo.com/home/mix/13ePGXR9dg>  <https://forms.office.com/Pages/ShareFormPage.aspx?id=On2Qi0__-0q2z0hP43i8MKOo1fr7wPJLnD2tfSLzIepUN1A5WklXMTJNNTNDWVpZSVlBMlhTUkdSNS4u&sharetoken=23WrooyCT0S7kOBCHXQY>  Britannica Launch Packs:  <https://packs.eb.com/science/220479#/pinboard>  WebQuest:  <http://d142-chenson.weebly.com/uploads/3/9/7/9/39790899/food_web_webquest.pdf> | | **CROSSCUTTING CONCEPT:**  **Energy and Matter**  *Students track energy changes through transformations in a system.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.* |
| ***6.LS2: Ecosystems: Interactions, Energy, and Dynamics*** | | | | | |
| **Time Frame** | **Learning Outcomes/Activities** | | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS2.4-**  **Using evidence from climate data, draw conclusions about the patterns of abiotic and biotic factors in different biomes, specifically the tundra, taiga, deciduous forest, desert, grasslands, rainforest, marine, and freshwater ecosystems.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | **Main Objective:**  I can use evidence from climate data to draw conclusions about the abiotic and biotic factors in Earth’s major biomes.  **Learning Outcomes:**  I can distinguish between biotic and abiotic factors in biomes.  I can identify the key biotic and abiotic factors in Earth’s major biomes and ecosystems.  I can analyze climate date to draw conclusions about Earth’s major biomes and ecosystems.  **Activities:**  Biomes Brochure  [Stations](https://www.pbslearningmedia.org/resource/tdc02.sci.life.eco.lp_biomes/biomes/#.Wx6kyC01S9Y) | | Biotic/Abiotic Sort:  <http://www.kubbu.com/student/?i=1&a=45900_abiotic_vs_biotic>  Britannica Launch Packs:  <https://packs.eb.com/science/220171#/pinboard>  Biome Project Ideas:  <http://beyondpenguins.ehe.osu.edu/issue/tundra-life-in-the-polar-extremes/modeling-ecosystems-integrating-science-literacy-and-art>  Study Jams: Biomes  <http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/biomes.htm> | | **CROSSCUTTING CONCEPT:**  **Pattern**  *Students recognize, classify, and record patterns in data, graphs, and charts.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Engaging in argument from evidence** *Students form explanations using source (including student developed investigations) which show comprehension of parsimony, utilize quantitative and qualitative models to make predictions, and can support or cause revisions of a particular conclusion.* |
| ***6.LS2: Ecosystems: Interactions, Energy, and Dynamics*** | | | | | |
| **Time Frame** | **Learning Outcomes/Activities** | | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS2.5:**  **Analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | **Main Objective:**  I can analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.  **Learning Outcomes:**  I can identify common invasive species in Tennessee.  I can explain how common invasive species impact native populations in Tennessee.  I can create a solution to reduce the impact of a specific invasive species in Tennessee.  **Activities:**  Research  WebQuest | | Invasive Species Info:  <https://www.invasivespeciesinfo.gov/unitedstates/tn.shtml>  Article:  <https://defenders.org/sites/default/files/publications/tennessee.pdf>  Lesson Idea for the Week:  <https://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=151>  WebQuest:  <https://www.pdffiller.com/jsfiller-desk5/?projectId=195562130&expId=3548&expBranch=1#d73795623f2c4ac6a506ae9cab72af1f> | | **CROSSCUTTING CONCEPT:  Cause and Effect**  *Students use cause and effect relationships to make predictions.*  **SCIENCE AND ENGINEERING PRINCIPLE:  Obtaining, evaluating, and communicating information** *(Observe) Students can evaluate text, media, and visual displays of information with the intent of clarifying claims and reconciling explanations. Students can communicate scientific information in writing utilizing embedded tables, charts, figures, graphs* |
| ***6.LS2: Ecosystems: Interactions, Energy, and Dynamics*** | | | | | |
| **Time Frame** | **Learning Outcomes/Activities** | | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS2.6-**  **Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | **Main Objective:**  I can research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.  **Learning Outcomes:**  I can identify how ecosystems change over time.  I can explain how natural catastrophes can change ecosystems.  I can describe how humans and other organisms can change ecosystems over time.  **Activities:**  Graphic Organizer  Investigation/Research | | Changes in Ecosystems:  <https://packs.eb.com/science/226300#/pinboard>  Population Balance:  <https://peer.tamu.edu//curriculum_modules/Ecosystems/module_2/index.htm> | | **CROSSCUTTING CONCEPT:   Systems and System Models**  *Students develop models to investigate scales that are beyond normal experiences.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.* |
| **Time Frame** | **Learning Outcomes/Activities** | | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS2.7-**  **Compare and contrast auditory and visual methods of communication among organisms in relation to survival strategies of a population.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | **Main Objective:**  I can compare and contrast auditory and visual methods of communication among organisms in relation to survival strategies of a population.  **Learning Outcomes:**  I can describe how members of a population may communicate with each other.  I can explain how organisms use methods of communication to survive.  **Activities:**  Stations/Rotations  Task Cards/Sort  Presentation | | Nature Works:  <http://www.nhptv.org/Natureworks/nwep3.htm>  Video:  <https://study.com/academy/lesson/animal-signals-communication-types-examples.html>  Animal Communication Project (free)  <https://www.teacherspayteachers.com/Product/Animal-Communication-37435> | | **CROSSCUTTING CONCEPT:   Cause and Effect**  *Students infer and identify cause and effect relationships from patterns*  **SCIENCE AND ENGINEERING PRINCIPLE:   Engaging in argument from evidence** *Students present an argument based on empirical evidence, models, and invoke scientific reasoning.* |
| ***6.LS2: Ecosystems: Interactions, Energy, and Dynamics*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS4.1-**  **Explain how changes in biodiversity would impact ecosystem stability and natural resources.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objective:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   Stability and Change**  *Students explain that systems in motion or dynamic equilibrium can be stable.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Engaging in argument from evidence** *Students present an argument based on empirical evidence, models, and invoke scientific reasoning.* |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.LS4.2:**  **Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   Systems and System Models**  *Students develop models for systems which include both visible and invisible inputs and outputs for that system.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Obtaining, evaluating, and communicating information** *Students can communicate technical information about proposed design solutions using tables, graphs, and diagrams.* |
| ***6.ETS1: Engineering Design*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ETS1.1- Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** | |  | **CROSSCUTTING CONCEPT:   Systems and System Models**  *Students develop models for systems which include both visible and invisible inputs and outputs for that system.*  **SCIENCE AND ENGINEERING PRINCIPLE:   Asking questions (for science) and defining problems (for engineering)** *Students define design problems, invoking scientific background knowledge to define multiple criteria and constraints for solutions.* |
| 7th Grade Science Curriculum Document Quarter 3 | | | | | |
| ***6.ESS2: Earth's Systems*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS2.1:**  **Gather evidence to justify that oceanic convection currents are caused by the sun’s transfer of heat energy and differences in salt concentration leading to global water movement.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   Cause and Effect**  *Students use cause and effect relationships to make predictions.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Constructing explanations and designing solutions**  *Students form explanations using source (including student developed investigations) which show comprehension of parsimony, utilize quantitative and qualitative models to make predictions, and can support or cause revisions of a particular conclusion.* |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS2.2: Diagram convection patterns that flow due to uneven heating of the earth.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   Energy and Matter**  *Students give general descriptions of different forms and mechanisms for energy storage within a system.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.* |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS2.3Construct explanation for how atmospheric flow, geographic features, and ocean currents affect the climate of a region through heat transfer.** | | | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT: Energy and Stability and Change**  *Students explain that systems in motion or dynamic equilibrium can be stable.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Engaging in argument from evidence** *Students critique and consider the degree to which competing arguments are supported by evidence*  *.* |
| ***6.ESS2: Earth's Systems*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS2.4-**  **Apply scientific principles to design a method to analyze and interpret the impact of humans and other organisms on the hydrologic cycle.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   SYSTEMS AND SYSTEM MODELS**  *Students include relevant and exclude irrelevant factors when defining a system.*  **SCIENCE AND ENGINEERING PRINCIPLE:  OBTAINING, EVALUATING, AND COMMUNICATING INFORMATION**  *(Observe) Students can evaluate text, media, and visual displays of information with the intent of clarifying claims and reconciling explanations. Students can communicate scientific information in writing utilizing embedded tables, charts, figures, graphs* |
| ***6.ESS2: Earth's Systems*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS2.5-**  **Analyze and interpret data from weather conditions, weather maps, satellites, and radar to predict probable local weather patterns and conditions.** | | | | | |
| 3 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   Cause and Effect**  *Students use cause and effect relationships to make predictions.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Analyzing and interpreting data**  *Students should create and analyze graphical presentations of data to identify linear and non-linear relationships, consider statistical features within data and evaluate multiple data sets for a single phenomenon* |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS2.6-** **Explain how relationships between the movement and interactions of air masses, high and low pressure systems, and frontal boundaries result in weather conditions and severe storms.** | | | | | |
| 3 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   Systems and System Models**  *Students develop models for systems which include both visible and invisible inputs and outputs for that system.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Developing and using models** *Students create models which are responsive and incorporate features that are not visible in the natural world, but have implications on the behavior of the modeled systems and can identify limitations of their models.* |
| ***6.ESS3: Earth and Human Activity*** | | | | | |
| **Time Frame** | | **Learning Outcomes/Activities** | **Online Resources** | | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS3.1-** **Differentiate between renewable and nonrenewable resources by asking questions about their availability and sustainability.** | | | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | | **CROSSCUTTING CONCEPT:   Systems and System Models** *Students evaluate the sub-systems that may make up a larger system.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Obtaining, evaluating, and communicating information** *(Observe) Students can evaluate text, media, and visual displays of information with the intent of clarifying claims and reconciling explanations. Students can communicate scientific information in writing utilizing embedded tables, charts, figures, graphs* |

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| ***6.ESS3: Earth and Human Activity*** | | | |
| **Time Frame** | **Learning Outcomes/Activities** | **Online Resources** | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS3.2:** **Investigate and compare existing and developing technologies that will utilize renewable and alternate energy sources.** | | | |
| 2 Weeks of Quarter  \_\_\_% of TNReady | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | **CROSSCUTTING CONCEPT:   Energy and Matter**  *Students track energy changes through transformations in a system.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Engaging in argument from evidence** *Students critique and consider the degree to which competing arguments are supported by evidence.* |

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| ***6.ESS3: Earth and Human Activity*** | | | |
| **Time Frame** | **Learning Outcomes/Activities** | **Online Resources** | **Crosscutting Concepts (CCC)**  **Science and Engineering Practices (SEP)** |
| **Standard: 6.ESS3.3:**  **Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.** | | | |
| 1 Weeks of Quarter  \_\_\_% of TNReady | **Sub Objectives:**  **Learning Outcomes:**  **Activities:** |  | **CROSSCUTTING CONCEPT:  Cause and Effect**  *Students use cause and effect relationships to make predictions.*  **SCIENCE AND ENGINEERING PRINCIPLE:**  **Engaging in argument from evidence** *Students critique and consider the degree to which competing arguments are supported by evidence.* |