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| **Suggested Time Frame** | **Standard** | **Essential Questions/**  **Learning Targets** | **Key Vocabulary** |
| **9 Weeks**  (3 weeks) | **HYDROSPHERE**  EEn.2.3.1--Explain how water is an energy agent (current and heat transfer).  EEn.2.3.2—Explain how ground water and surface water interact.  EEn.2.4.1—Evaluate human influences on freshwater availability.  EEn.2.4.2—Evaluate human influences on water quality in North Carolina’s river basins, wetlands, and tidal environments. | The students will understand hydroelectric resources can be used to produce electricity in some areas of the country.   * What is an advantage of using hydroelectric resources for power rather than using fossil fuel resources for power? * What is a disadvantage of using hydroelectric resources for the production of electricity? | Density Currents  Specific Heat Capacity  Water (hydrologic)  Cycle  Thermocline Evaporation Infiltration  Salinity  Gyres  Upwelling  Density current  Surface current  Subsidence  Estuary  Permeability  Porosity  Groundwater  Surface Water  Potable water  Salt-water intrusion  Non-point source  Point source  Sedimentation  Wetlands  Watershed  Basins  Tributary  Wells  Flood  Aquifers  Runoff  Eutrophication |
| (2 weeks) | **METEOROLOGY**  EEn.2.5.1—Summarize the structure and composition of our atmosphere.  EEn.2.5.2--Explain the formation of typical air masses and the weather systems that result from air mass interactions.  EEn.2.5.3—Explain how cyclonic storms form based on the interaction of air masses.  EEn.2.5.4—Predict the weather using available weather maps and data (including surface, upper atmospheric winds, and satellite imagery).  EEn.2.5.5—Explain how human activities affect air quality. | The students will understand a weather map shows closely spaced isobar lines over an area.   * What do the isobar lines represent? * What do the closely spaced isobars indicate about the weather in the area?   The students will understand a weather map shows many symbols to indicate various weather patterns.   * What type of front does this symbol represent (cold front)? * What kind of weather is expected at this front?   The students will understand that El Nino has an important influence and consequences on the weather and climate patterns on Earth.   * What are the causes and effects of an El Nino? | Ozone Troposphere Stratosphere Mesosphere Thermosphere Exosphere Radiation Convection  Air mass Coriolis effect Supercell Tornado  Fujita scale Tropical cyclone  Saffir-Simpson scale  Eye wall  Storm surge  Trade winds Prevailing westerlies Polar easterlies  Jet stream  Front  High pressure Low pressure Isobar Smog  Acid precipitation  Chlorofluorocarbons (CFC’s) |
| (2 weeks) | EEn.2.6.1—Differentiate between weather and climate.  EEn.2.6.2—Explain changes in global climate due to natural processes.  EEn.2.6.3—Analyze the impacts that human activities have on global climate change (such as burning hydrocarbons, greenhouse effect, and deforestation).  EEn.2.6.4—Attribute changes to Earth’s systems to global climate change (temperature change, changes in pH of ocean, sea level changes, etc.) | * What are the causes of recent changes in Atmospheric composition and how might they affect the climate in the future? * What impacts have human had on the atmosphere and air quality? * What are the consequences of climate change? | Carbon dioxide  Weather  Climate  Greenhouse gases  Greenhouse effect  Ice age  El Nino  Global warming  Climate change  Heat island  Deforestation  Fossil fuels  Carbon cycle  pH  Acid  Base |
| (1 Week) | **ENVIRONMENTAL STUDIES**  EEn.2.7.1— Explain how abiotic and biotic factors interact to create the various biomes in North Carolina.  EEn.2.7.2—Explain why biodiversity is important to the biosphere.  EEn.2.7.3—Explain how human activities impact the biosphere.  EEn.2.8.1—Evaluation alternative energy technologies for use in North Carolina. | Students will understand farmers use of many conventional methods of growing crops.   * What is one advantage of using conventional agricultural methods? * How can conventional agricultural methods impact the economy?   The students will understand that our ecological footprints are important to the future of Earth.   * Explain what an ecological footprint is. * Why would countries such as the U.S. and Germany have a high ecological footprint?   Students will understand that to conserve natural resources, people are encouraged to “reduce, reuse, recycle.”   * Identify one example of a material that could be reused. * How could reusing the object provide a lasting impact on the environment? | Biotic  Abiotic  Biome  Biosphere Biodiversity  Habitat  Population  Species  Sustainable  Ecosystem  Invasive species (non-native/exotic species) |
| (1 Week) | EEn.2.8.2—Critique conventional and sustainable aquaculture practices in terms of their environmental impacts.  EEn.2.8.3—Explain the effects of uncontrolled population growth on the Earth’s resources.  EEn.2.8.4—Evaluate the concept of “reduce, reuse, recycle” in terms of impact on natural resources. | * What makes a resource sustainable? * Why is it important to conserve resources? | Aquaculture  Sustainable Agriculture  Conventional Agriculture  Overharvesting  Population  Carrying capacity  Renewable resources  Recycle  Alternative energy  Traditional energy  Limiting factors  Ecological footprint  Carbon footprint  Compost |
| (1 Week) | Review/ Benchmark |  |  |
| **9 Weeks**  (2 Weeks) | **LITHOSPHERE**  EEn.2.1.1—Explain how the rock cycle, plate tectonics, volcanoes, and earthquakes impact the lithosphere.  EEn.2.1.2—Predict the locations of volcanoes, earthquakes, and faults based on information contained in a variety of maps.  EEn.2.1.3—Explain how natural actions such as weathering, erosion (wind, water and gravity), and soil formation affect Earth’s surface.  EEn.2.1.4—Explain the probability of an preparation for geohazards such as landslides, avalanches, earthquakes and volcanoes in a particular area based on available data. | Students will understand that volcanoes are a major geologic feature on Earth.   * Describe the particles and gases emitted during a volcanic eruption. * Describe how a volcano can impact global climate. | Weathering  Erosion  Foliation  Bedding  Sediment Deposition Geohazard  Fall zone  Barrier island Topographic  Sink hole  Convection  Plate tectonics  Ridge push  Slab pull  Convergent  Divergent  Transform  Magma  Lava  Lahar  Epicenter  Focus (Focal point)  Magnitude  Primary Wave  Secondary Wave  Surface wave  Geologic Time Scale |
| (1 Week) | EEn.2.2.1—Explain the consequences of human activities on the lithosphere (such as mining, deforestation, agriculture, overgrazing, urbanization, and land use) past and present.  EEn.2.2.2—Compare the various methods humans use to acquire traditional energy sources (such as peat, coal, oil, natural gas, nuclear fission, and wood). | * How do human activities impact erosional processes and what are the possible consequences of this? | Urbanization  Harvesting  Mining  Deforestation  Reclamation  Mitigation  Agriculture  Overgrazing  Land use  Peat  Fossil fuel  Fission  Fusion  Traditional energy Alternative energy  Natural Resource  Jetty |
| (4 Weeks) | **ASTRONOMY**  EEn.1.1.1—Explain the Earth’s motion through space, including precession, nutation, the barycenter, and its path about the galaxy.  EEn.1.1.2—Explain how the Earth’s rotation and revolution about the Sun affect its shape and is related to seasons and tides.  EEn.1.1.3—Explain how the sun produces energy which is transferred to the Earth by radiation.  EEn.1.1.4—Explain how incoming solar energy makes life possible on Earth. | Students will understand that celestial objects in space have a gravitational pull on Earth.   * Describe how the Moon influences the tides on Earth * Why does the Moon have a stronger gravitational pull on Earth than the Sun?   Students will understand that radiation from the sun causes the land and water on Earth heat up at different rates.   * Explain differential heating of the Earth’s surface (land temperature vs. water temperature) * Predict how the heating of the surface would change if we received 100% of the Sun’s radiation. | Universe Galaxy  Rotation  Revolution Tilted axis Seasons  Barycenter  Solstice Equinox Eclipse Elliptical Perigee Apogee  Neap tide Spring tide Nutation Precession  Solar  Lunar  Kepler’s Law  Orbit  Fission  Fusion  Big Bang Theory Gravitational pull  Photosynthesis  Electromagnetic Spectrum  Satellite |
| (1 Week) | **Review/ NC Final Exam** |  |  |