**July 11 – 13, 2017**

**DAY 1: HOW THE CLIMATE WORKS**

**9:00 Introductions & Pre-Test**

**BLOCK 1: ENERGY & RADIATION**

**9:30 ENGAGE:** **Energy Toys and Writing with Light**

**9:40 EXPLORE: Rainbow Glasses, Thermal IR Camera, & EM spectrum**

**10:00 EXPLAIN: Energy and EM Radiation**

**10:30 BREAK**

**BLOCK 2: GREENHOUSE GASES & EARTH’S RADIATION BUDGET**

**10:45 ENGAGE: Greenhouse molecule dancing**

**10:55 EXPLORE: Glass plates greenhouse model**

**11:15 EXPLAIN: Earth’s Energy Budget**

**11:55 EXTEND: People Power**

**12:15 LUNCH**

**BLOCK 3: VERTICAL MOTION & MIXING**

**1:00 ENGAGE: Heat packs & latent heat**

**1:10 EXPLORE: Trash Bag Hot Air Balloon**

**1:30 EXPLAIN: Vertical motion, precipitation**

**2:10 EXTEND: Radiosonde launch**

**2:30 BREAK**

**BLOCK 4: WINDS & CURRENTS**

**2:45 ENGAGE: Coriolis ring toss**

**2:55 EXPLORE: Tabletop spin tank**

**3:15 EXPLAIN: Circulation of Atmosphere & Oceans**

**3:55 EXTEND: Sketch the winds & currents**

**4:15 EVALUATE: Journaling (reflection questions)**

**4:30 ADJOURN**

**DAY 2: CLIMATES OF THE PAST**

**BLOCK 1: ORIGINS**

**9:00 ENGAGE: Rocks from Earth & Space**

**9:10 EXPLORE: Cosmic and Geologic Time**

**9:30 EXPLAIN: Origin of the Sun, Earth, & Atmosphere**

**10:10 EXTEND: Plate tectonics**

**10:30 BREAK**

**BLOCK 2: FROM OXYGEN TO IMPACT**

**10:45 ENGAGE: How long can you hold your breath?**

**10:55 EXPLORE: Sparkling Water & CO2**

**11:15 EXPLAIN: Climate change over the past half-billion years**

**11:55 EXTEND: The rock cycle: mountains to mud**

**12:15 LUNCH**

**BLOCK 3: FROM HOTHOUSE TO ICEHOUSE**

**1:00 ENGAGE: Alley Ice Core movie**

**1:10 EXPLORE: Catastrophic global warming 55 million years ago (PETM)**

**1:30 EXPLAIN: Climate Changes over the past 50 million years**

**2:10 EXTEND: Website Walk-through**

**2:30 BREAK**

**BLOCK 4: FROM HOLOCENE TO ANTHROPOCENE**

**2:45 ENGAGE: Lascaux, Sumer, Egypt, & Rome**

**2:55 EXPLORE: Ice core CO2 and temperature plots**

**3:15 EXPLAIN: Ice Ages & Interglacials**

**3:55 EXTEND: Tree ring exercise**

**4:15 EVALUATE: Journaling (reflection questions)**

**4:30 ADJOURN**

**DAY 3: CLIMATES OF THE FUTURE**

**BLOCK 1: SIMPLE, SERIOUS, & SOLVABLE**

**9:00 ENGAGE: Carbon Crisis in 90 Seconds**

**9:10 EXPLORE: Discovery of Global Warming**

**9:30 EXPLAIN: Simple, Serious, & Solvable**

**10:10 EXTEND: Climate Sensitivity in the Past 1000 Years (web activity)**

**10:30 BREAK**

**BLOCK 2: SIMPLE – HOW CO2 WARMS THE CLIMATE**

**10:45 ENGAGE: Dances with Molecules Video**

**10:55 EXPLORE: How Can We Survive Night?**

**11:15 EXPLAIN: Simple: How Adding CO2 Warms the Climate**

**11:55 EXTEND: Thermal Emission of the Earth (web acrivity)**

**12:15 LUNCH**

**BLOCK 3: SERIOUS – WHY CLIMATE CHANGE MUST BE STOPPED**

**1:00 ENGAGE: Carbon Footprint Handout & Calculator**

**1:10 EXPLORE: Emissions & Climate Calculator**

**1:30 EXPLAIN: Serious: Effects of Climate Change**

**2:10 EXTEND: Third Millennium Climate Model**

**2:30 BREAK**

**BLOCK 4: SOLVABLE – THE KIDS WILL BE ALRIGHT**

**2:45 ENGAGE: Video – The Solar Power Revolution**

**2:55 EXPLORE: Drawdown Book and Website**

**3:15 EXPLAIN: Solvable – Carbon, Energy, and Economics**

**3:55 EXTEND: Post-Test**

**4:15 EVALUATE: Course evaluation, Certificates, Farewell!**

**4:30 ADJOURN**