LESSON: Intro & Pre-test
UNIT 6: Nānā ‘Uli (Meteorology & Climatology)

Objectives:
1) informally assess students’ prior knowledge;
2) learn about ancient science of meteorology & climatology in Hawai‘i;
3) practice observation skills related to meteorology & climatology;
Optional – 4) prepare for field trip

Science-Related Careers/Employers:

Minutes:

<table>
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<tr>
<th>Minutes</th>
<th>Suggested Sequence</th>
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<tbody>
<tr>
<td>10-20</td>
<td>a) GROUP PRE-TEST – (fact &amp; skill preview) show class the “Weather Game” Test PowerPoint or handout of slide 1 only to informally assess prior knowledge</td>
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<tr>
<td>10-35</td>
<td>b) DISCUSSION (with GUEST speaker if possible) – present &amp;/or respond to “Hawaiian Meteorology Intro” PowerPoint &amp; “Space” handout (with Cloze statements); Optional – students write pg. 2 answers now or for homework</td>
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<td>10-15</td>
<td>c) GROUP ACTIVITY – up to 9 groups write notes on “Local Climate Observations” handout, then share with class</td>
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<td>5-10</td>
<td>d) Optional – LECTURE and view “Hawaiian Climates” PowerPoint or handout</td>
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<td>5</td>
<td>e) HOMEWORK/PROJECT – discuss “Local Observations &amp; Research” handout;</td>
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<td>Total =</td>
<td>f) Optional – discuss field trip to local observation heiau, station, museum or college where meteorological studies were/are conducted</td>
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<td>40-85 min</td>
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Materials:
- For teacher: PowerPoint equipment & disk or handouts
- For students: Handouts: Weather Game, slide 1 only, if needed; Space; Local Climate Observations (1 for up to 9 groups only); Hawaiian Climates handout, if needed; Local Observations & Research
- Safety: n/a

Assessment/Performance Indicators:
- Informal assessment: participated in pre-test with Weather Game; listened to PowerPoints &/or lectures & discussions; contributed to group notes on Local Climate Observations handout
- Formal assessment: Space handout, pg. 1 Cloze statements completed & pg. 2 answers attempted

Suggested Grades: 25 points
- 12 for paying attention to all class activities (informal)
- 8 for Cloze answers & 2 for drawing (pg 1); 1 each for guessing; up to 2 points possible for bonus question

Exceeds Expectations:
- insightful &/or fully engaged in participating (10 -12 points);
- handout answers accurate to insightful (13-15 points)

Meets Expectations:
- adequate participation (7-9 points); handout answers 69-79% accurate (9-10½ points)

Needs Improvement:
- inadequate participation (6 points or less); handout answers less than 69% accurate (0-8½ points)

Hawaiian Values:

<table>
<thead>
<tr>
<th>Ahonui (patience)</th>
<th>Akahai (modesty)</th>
<th>Aloha (loving)</th>
<th>Alaka‘i (leadership)</th>
<th>Ho‘i‘hi (respect)</th>
<th>Kuleana (responsibility)</th>
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<tbody>
<tr>
<td>Laulima (helpful)</td>
<td>Lōkahi (harmony)</td>
<td>Mālama (caring)</td>
<td>Na‘auao (wisdom)</td>
<td>'Olu‘olu (positivity)</td>
<td>Pono (right behaving)</td>
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</table>
### Learning Styles:
- ✔ Left Brain  ✔ Right Brain  ✔ Auditory  ✔ Visual  ✔ Kinesthetic/Tactile  ✔ Spatial

### Technology, Math &/or Literacy Skills:
Hawaiian vocabulary; ancient & modern concepts of atmosphere & climate types; observing & measuring patterns/anomalies in nature

### Keywords:
astronomy; climatology; climate; climatic regions; clouds; comet; elevation; heiau; interview; Kamehameha; meteorology; moon; observation; ocean; space; voyaging; weather

### Enrichment/Extension:
Search the Internet for Hawai'i weather forecasts and data then write up a paragraph on 5 or more websites with valuable information

### Standards/HCPS:
**SC.BS.3.4** (ORGANISMS AND THE ENVIRONMENT): Understand the unity, diversity, and interrelationships of organisms, including their relationship to cycles of matter and energy in the environment

### General Learner Outcomes:
GLO #2 - Understand it is essential for human beings to work together;  
Optional: GLO #5 - Communicate effectively

### NHEC Cultural Pathways:
14.1 Learners are keen observers of the natural environment.

### National Career Development Guidelines:
ED2.A7 – Demonstrate participation in informal learning experiences; PS2.K9 – Recognize that you should have knowledge about, respect for, be open to, and appreciate all kinds of human diversity.

### Hawai'i College Links:
Ka ‘Imi ‘Ike program ([kaimiike@hawaii.edu](mailto:kaimiike@hawaii.edu)) for undergrads