Instructions for Wind Energy 101

Everett Wind Energy Team

Thank you for your participation in Wind Energy 101.

This 5-part module is presented by the Everett Wind Energy Team (EWET). The team is a collaboration of students from Washington State University and Everett Community College. EWET is interdisciplinary and open to students majoring in engineering, data analytics, environmental science, business marketing, and communications.

EWET is participating in the United States Department of Energy 2021 Collegiate Wind Competition. This unique competition challenges students to design and build a small-scale wind turbine; plan a wind farm in South Dakota, and conduct a community engagement project.

Unfortunately, due to the COVID-19 restrictions, this community engagement project will be available virtually.

Members have worked together to develop Wind Energy 101 - an introductory course - based on their knowledge and experiences. The purpose of this engagement is to mentor younger students on the importance of wind.

Within the 5-part modules, EWET will excite high school students about the wind industry, inspire underclassmen to join student clubs, raise awareness in their community about wind energy, and discover career opportunities.

Step 1: Preparation

- Ensure all students participating in Wind Energy 101 have been registered in WhiteBox.
- Confirm all students have access to the materials in the hands-on activity.
  https://www.energy.gov/eere/downloads/how-build-wind-turbine-less-20-minutes
- Distribute the pre-survey link to gauge students' current comprehension of wind energy.
  https://wsu.co1.qualtrics.com/jfe/form/SV_6R6zMqtGub0gnNI

Step 2: Presentation

- Play each of the Wind Energy 101 parts in chronological order.
  https://www.youtube.com/watch?v=xhfZ5cWMd7s&list=PLNZjZzvsskxwrzjQfgnWMeOfxsMj91iyy
  - All five parts of the modules are pre recorded, using VoiceThread, to ensure students can see the presentation and a video of the speaker.
    * Some parts have additional videos embedded within and will play automatically.
  - EWET's students explain a feature about wind energy, discuss an activity, and showcase a wind industry professional - through video lectures.
    * The videos vary in length, but are about an hour and a half all together.
  - Please review **Step 3: Activities** on what WhiteBox activities students should be competing in the different parts.

Step 3: Activities

- After "Part 1 - Introductions" encourage students to log into WhiteBox to become comfortable with the site and to look at the Research Module. They can read the *Power in the Wind* page.
  - Please notify EWET if any students have questions or concerns at EWETmedia@gmail.com.
  - Ensure students have access to the *WhiteBox Instructions* document. This is a step-by-step reference guide for WhiteBox, including screenshots to assist students navigating through the activities.
- After "Part 2 - Turbine Design" encourage students to log into WhiteBox and apply what they have learned. They can now complete the following activities in WhiteBox:

  From the Research module:

  * Blade Terminology
  * Blades in Motion
  * Blade Pitch
  * Blade Span and Chord

  From the Engineering module:

  * Blade Profile
  * Blade Pitch/Twist
  * Blade Model
  * Blade Assembly

    * Nacelle
    * Tower
    * Power
    * Blade Pitch Experiment
    * Blade Span Experiment
    * Blade Chord Experiment

- After "Part 4 - Project Development" encourage students to log into WhiteBox and apply what they have learned. They can now complete the following activities in WhiteBox:

  From the Research module:

    * Wind Farm Siting

  From the Engineering module:

    * Maps
    * Sites
    * Energy Analysis
    * Cost Analysis

- After "Part 5 - Recap" open the Kahoot quiz and encourage the students to participate at home.

  https://play.kahoot.it/v2/lobby?quizId=6fd50265-f307-4aef-8b44-afa08e897cdc

Step 4: Assessment

- Distribute the post-survey link to gauge students' comprehension of wind energy now after participating in Wind Energy 101.

  https://wsu.co1.qualtrics.com/jfe/form/SV_em5o3ecBNvhkUAu

Step 5: Notify

- Once all steps have been completed please notify EWET at EWETmedia@gmail.com so members may begin to process the survey questions.