

# Meeting Minutes

**Date:** 9/15/14

**Present:**

- ME students:
  - Steven Blanchette, David Deli, Jeremiah McCalister, Abigail McCool
- CE students:
  - n/a
- Faculty/Advisors:
  - Dr. Kunihiko Taira, Dr. Sungmoon Jung

**Notes:**

- Scope of senior design project:
  - Focus on turbine blades and tower
    - Civil Students – focus on tower (concrete design, construction)
    - Mechanical Students – focus on turbine blades
  - Minimum expectations:
    - Simple blade design (driven by fatigue analysis – blades, calculations, and prototype)
  - Maximum expectations
    - “Changing the world” (This topic is currently being researched by G.E)
- Additional notes on project from Dr. Jung (project sponsor):
  - Google companies for internal parts
  - Use National Renewable Energy Lab (NREL) 5MW prototype
  - FAST – computer program that we need to use. It gives estimations for drag coefficient, forces, energy estimation, etc. (i.e you can input a bending moment and it will provide structural analysis)
  - Prototype can be small-scale full turbine or near full-scale connection parts of the turbine for testing. Prototype should have “wow” factor (e.g. put light blubs in paper houses to light them up with the small wind turbine)
  - Turbine must be better than current low wind speed region turbines
  - The team is NOT responsible for designing the rotor or gearbox (use specs of 5MW turbine from NREL)
  - Turbine will be 150-200% the size of traditional turbines. The same materials can't be used because it would be way too heavy
  - Florida has low wind speed of about 5m/s and 80m height (height of current turbines) the wind speed increases to about 7m/s as you increase the height. – Get exact formula for increasing wind speed with altitude from Civil Students
  - Weather conditions are not a factor for this project. Turbine should work effectively in favorable weather conditions

- Team is not responsible for worrying about a pitch controller for the wind turbine
- Ideas:
  - Skeleton structure with fabric (e.g. circus structures)
- Approach:
  - Scale everything by two and then see where things fail and where there is room for improvement
- Meetings with Dr. Jung will be once or twice a month
- Dr. Taira will be happy to look over any documents we have to submit for the senior design course
- Dr. Taira suggests writing letters to companies asking for donations for the prototype (tell the companies we will display their logo)
- Team should create a checks and balances system to ensure that everyone contributes
- To Do:
  - Literature Review